NPL-UI2-3-224-R8 7297

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1.08

VIA FEDERAL EXPRESS

April 6, 1992

Larry Reed, Director
Hazardous Site Evaluation Division
(Attn: NPL Staff)
Office of Emergency and Remedial
Response (OS-230)
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

RE: In the Matter of the Proposed Listing of Richardson Flat Tailings, Summit County, Utah, On the National Priorities List for Uncontrolled Hazardous Waste Sites, Proposed Rule No. 12

Dear Mr. Reed:

Please find enclosed an original and three copies (including attached Exhibits) of the Comments of United Park City Mines Company in Opposition to the Proposed Listing of Richardson Flat Tailings, Summit County, Utah, on the National Priorities List.

Please acknowledge receipt by date-stamping the enclosed copy of this letter and returning it to me in the self-addressed, stamped envelope provided for your convenience.

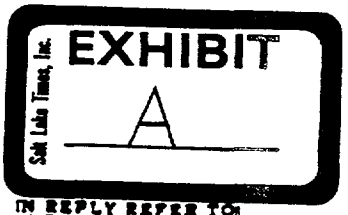
Thank you for your assistance.

Very truly yours,

Rosemary J. Beless

Rosemary J. Beless
Attorney for United Park City
Mines Company

RJB:jmc
Enclosures (6)
cc: Edwin L. Osika, Jr.



UNITED STATES GOVERNMENT

Memorandum

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Salt Lake District

IN REPLY REFER TO:
1703 (U-022)
Silver Creek

TO : State Director U-932

Date: [illegible] NOV 86

FROM : District Manager, Salt Lake

SUBJECT : Response to Memo Requesting Preliminary Natural Resources Surveys For Silver Creek Tailings (EB 86/1153) and Midvale Slag Site (EB 86/1154)

Attached you will find preliminary natural resource surveys for the Silver Creek tailings and the Midvale slag site. The current status of the Silver Creek site as it relates to the EPA listing could change with the advent of a special rider attached to the Superfund reauthorization bill passed October 17, 1986. The Midvale site is not on public lands and does not impact any public lands administered by BLM downstream.

If any further information is needed for these assessments, please feel free to contact the Hazardous Materials Coordinator, Susan Skinner at ext. 5348.

Attachment
Two Reports

John A. Stephens

SILVER CREEK TAILINGS
PARK CITY, UTAH

The Silver Creek Tailings are described in attachment A as those tailings also known as the Prospector Square Site (CERCLIS NO. 980951404). It is our understanding that the Utah Dept. of Health conducted tests coming up with a preliminary hazard ranking of 46.63 as delineated in a letter to EPA, Denver, dated August 30,1984. At that time the State of Utah requested that the site be placed on the National Priority List (NPL). The actual site boundaries and pollution plume were never strictly delineated. It was planned that once the site was placed on the NPL list, then monies would be available to evaluate the actual extent of the contamination. Park City Corporation was also involved by having a private consultant test and evaluate Prospector Square. The city also covered all exposed areas of the tailings with topsoil and planted grass as a remedial action. By taking action on the site and coming up with their own data which refuted the State's findings, the city went to EPA and requested that the site be removed from Superfund. EPA's findings were to be issued during the winter of 1985-86. The city also approached Utah's Congressional delegation for support and potential legislative relief. The Superfund Amendments and Reauthorization Act(SARA), dated Oct.17,1984, includes specific wording that deletes the Silver Creek Tailings from the NPL until such time that the President (EPA) finds the condition has changed to cause a Hazard Ranking Score(HRS) where the site would become eligible for the NPL once again. As per personal conversations with the State of Utah, until the EPA further evaluates the site, they will consider it off the NPL. (See attachment B) Basically, unless there is cause for conditions to change at the site, it appears that the site will not be included on the NPL. Since the site is no longer on the NPL, yet still open for evaluation, the impacts to public lands are unknown at this time.

Potential damages to resources on public lands can be assessed by describing the existing situation as it stands to date. The BLM manages a small parcel, approx. 38 acres, 100 yards downstream from the old Silver Creek tailings pond. (See attachment C) Silver Creek runs through the parcel from West to East. The stream channel is choked with ground mineral material consisting of lead and silver ore. The stream has been like this for some time and willows and grasses have grown where the minerals have not been disturbed. However, where piles of oxidized material lie, no vegetation has grown. It is not known if this material is from the Silver Creek tailings pond or just ground ore. It is our understanding, based on informal discussions with past operators and the Dept. of Health, that the mill operation in the 1950's used to have production goals based on a ton per day recovered vs. tons of processed mineral per day. After the recovered tonnage requirement was met, then raw ground ore was supposedly passed directly through the system into Silver Creek. Another version was that Silver Creek was used to sluice the raw ore, after it had been ground, to mills located downstream at Richardson Flat(CERCLIS NO. 980952840) where it was then processed. The timeframes of these potential impacts are not known. It is also not known whether the Silver Creek tailings pond was designed to any storm design standards or if any of the tailings washed into the creek or leaked into the creek, thus impacting BLM's parcel.

Before EPA completely drops the site, it is recommended that it would be beneficial for them to contact those mine workers still in the area to get an historically accurate record of the mining and milling processes of the 1930's through the 1950's while these people are still alive. It may be that this site will come up again someday and this information would be very valuable.

Currently the downstream parcel has mining claims located under the Mining Law for placer deposits. These claims are historically known as the Silver Maple Claims 1 and 2, and are currently on the CERCLIS (980951396). The same parcel has several right-of-ways passing through it. A State highway, railroad, utility line, irrigation ditch, jeep trail, and sewer line are all located on the parcel. In addition, Park City Corporation has applied for a Recreation and Public Purpose (R&PP) lease for the parcel to be utilized as a park subject to the mining claims. In 1985 a validity determination found the placer claims to be valid and the lode claims invalid. These placer claims are located on the mineralized material within the floodplain that was either sluiced downstream for processing or came from the tailings pond.

During the summer of 1985, Park City Corporation encroached upon this parcel while building a part of the park on lands they control. At this time a trench was dug, disturbing the mineralized material and the soil below it. Also at this time the Snyderville sewer District received a right-of-way from BLM to construct a sewer line through the parcel. Since the sewer trench would allow optimum access for prospecting and evaluation of the parcel by the claimants, the trench was left open for approximately one month. This trench was subsequently backfilled and reseeded in the fall of 1985. The revegetation has been marginally successful to date, but the sewer district has not been released from its revegetation obligations.

Over time the excessive material caused the creek to become a braided stream, filling in old channels and creating new ones as the stream tried to maintain its equilibrium. The "tailings" are thickest towards the west end and thin towards the east. Oxidization has occurred where the minerals have reacted to the surface water and air. A typical orange slime due to the organic interaction of iron oxides with the water organisms exists in stagnant pools. The stream contains several small fish (sculpin) and is moderately turbid although no other water quality indicators were noted. This material contains iron, lead and zinc sulfides. There are sparsely vegetated areas where this fine grained material composes the majority of the topsoil. The existing vegetation consists of a riparian zone with willows, sedges, grasses, and cattails, and an upland sagebrush zone with some aspen and oak brush on the hill slopes.

The claimants were contacted Nov 5, 1986 to find out their current plans. Since the claims were found valid in December of 1985 and the price of gold is slightly higher, the claimants are planning to apply for patent as soon as they arrange for a mineral survey.

As far as impacts to the BLM parcel from actions regarding the Silver Creek Tailings, with our knowledge to date urban impacts such as runoff, trash, and greater public use have a greater potential than the tailings upstream. Park City Corporation has annexed the BLM parcel to the city limits. The city has constructed a park with a small reservoir directly above the BLM parcel. This reservoir could help in controlling runoff. Their plans were to make a park the whole length of the annexation which would help stabilize the tailings on the BLM parcel. However, the R&PP was leased subject to the mining claims, so only that portion of the park not on BLM could be constructed. This park, however, has attracted users who also use the BLM parcel for walking, hiking, and jogging. The County road running along the south end of the parcel is used by jeeps, ATV's, motorcycles, horses, and bicyclists. Various trash piles (tin cans, beer cans, buckets, concrete) and grass clipping piles are found along this road. Since the "tailings" are mineral in character, there is a positive impact for mineral location and potential mining.

In summary, based on current available information it appears that the impacts from the Silver Creek tailings pond have been there for some time and future impacts, unless groundwater is later found degraded, would be minimal.

INDEX TO ATTACHED PHOTOS

1. Prospector Square Housing. Foreground Silver Creek tailings.
2. Looking West towards Silver Creek Tailings from the BLM parcel. Note Park City Park development with pond.
3. Looking West from Silver Maple Claims boundary. Note flood control structure on Pond.
4. Silver Creek. Note "tailings" piles devoid of vegetation; State highway in background.
5. Make-up of tailings with natural stream load. Note how fine grained the material is.
6. Footprints of wildlife using Silver Creek as a watering source-mostly deer, small mammals, and domestic sheep.

7&8. Panorama showing BLM parcel. Looking East.

9. Organic reaction with iron sulfide in stagnant areas of Silver Creek.
10. Organic reaction same as described above. Note tailings pile in background has slight iron staining on right side from oxidation.
11. Area where sewer trench has been reseeded. Note marginal success due to lack of topsoil and possibly the fine grained mineral material lacking nutrients.
12. Picture shows vegetation types, Silver Creek, tailings pile-oxidizing, irrigation ditch, utility line, and State highway.

NPL-U12-3-224-R8 con

BEFORE THE UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

IN THE MATTER OF THE PROPOSED LISTING OF RICHARDSON FLAT TAILINGS, SUMMIT COUNTY, UTAH, ON THE NATIONAL PRIORITIES LIST	))))	COMMENTS OF UNITED PARK CITY MINES COMPANY IN OPPOSITION TO PROPOSED RULE

United Park City Mines Company ("United Park") hereby respectfully submits its comments in opposition to the proposal of the Environmental Protection Agency ("EPA"), published in the Federal Register of February 7, 1992, to list Richardson Flat Tailings, Summit County, Utah, on the National Priorities List ("NPL").

As set forth more fully below, EPA has no rational basis or legal authority to list the Richardson Flat site on the NPL. First, EPA's Hazard Ranking System ("HRS") score for the site is based upon significant factual errors, unsubstantiated conjecture, and incorrect assumptions. In addition, EPA has acted arbitrarily, capriciously, in abuse of its discretion, and without legal authority, in combining the floodplain sediments area of contamination migration with the Richardson Flat tailings impoundment. The floodplain sediments must be segregated and scored separately from the Richardson Flat tailings impoundment. When the Richardson Flat site is rescored on the basis of correct, verified information, the HRS score is significantly lower than the threshold score of 28.5. Finally, EPA's proposed rule

to list the Richardson Flat site on the NPL is subject to the President's 90-day moratorium on new regulations that could hinder growth, and it must be rescinded because of that moratorium.

I. BACKGROUND OF THIS PROPOSED LISTING

On June 24, 1988, the EPA proposed the Richardson Flat site to the NPL, using an HRS score based, in large part, on a surface water sampling investigation conducted by EPA's contractor Ecology & Environment, Inc. ("E&E") in June 1985. In its Comments in opposition to the proposed listing, dated August 22, 1988, United Park set forth a number of substantial errors in EPA's proposed listing, including the fact that E&E's June 1985 surface water sampling study contained no downstream sample.

In response to United Park's Comments, EPA contracted with E&E to perform a new surface water sampling study included in E&E's Supplemental Site Inspection Report submitted to EPA October 13, 1989 and resubmitted December 20, 1989 (the "1989 Supplemental Site Inspection Report"). The primary purpose of the 1989 Supplemental Site Inspection was to verify a release of contaminants into Silver Creek or other surface water.[1/] The 1989 Supplemental Site Inspection Report concludes:

> Analytical results of surface water and sediment samples collected from Silver Creek and the diversion ditch do not support an observed release of contaminants to surface water.

1/ 1989 Supplemental Site Inspection Report at pp. 1-2 and 5.

Id. at 21. With no observed release to surface water, the Richardson Flat site scored below the 28.50 cutoff and was dropped from consideration for the NPL on February 11, 1991.

On February 7, 1992, using the new HRS, the EPA again proposed the Richardson Flat site to the NPL. No new testing, sampling, or studies of the site had been performed since the site was dropped from consideration on February 11, 1991.

However, in its attempt to derive a new elevated score for the site, EPA has not merely applied the new HRS to the data obtained by its prior testing and sampling of the site. Instead, EPA has derived the new elevated score for the site by contriving two unsubstantiated "observed releases" to the surface water based upon: (1) aerial and on-site photographs which do not (and cannot) document such a release; (2) a two-sentence record of a May 16, 1991 conversation with an E&E employee, who visited the site July 18-20, 1989 for the 1989 Supplemental Site Inspection, as to the extent of the tailings "to the best of [his] recollection"; and (3) the uncorroborated statement of a Utah Bureau of Solid & Hazardous Waste ("UBSHW") employee who made visual inspections (no sampling or testing) of the site with United Park personnel on June 7 and 14, 1990, and finalized and mailed to United Park a memorandum concerning his findings on his inspections in which no releases are reported, but weeks later revised his memorandum to state that "the sloughing of tailings into the diversion ditch was observed."

In other words, the EPA dropped the site from consideration for the NPL on February 11, 1991, because the 1989 Supplemental Site Inspection Report, based upon analytical, quantified data, concluded that no release to surface water had occurred. Now, with no additional analytical, quantified and documented data, the EPA has altered the conclusion of the 1989 Supplemental Site Inspection Report by the unsubstantiated and inaccurate recollection of an E&E employee and the inconsistent, uncorroborated, and unsubstantiated one-sentence statement of a UBSHW employee.

The revised UBSHW memorandum is particularly troubling because, as discussed in detail in Section III below, it was not corroborated by two other individuals attending the same site inspections, it was not verified by any sampling or analysis, and it was completely inconsistent with the UBSHW employee's prior written characterization of the same site inspections. Anyone can make a mistake, but not on such a fundamental point. The principal reason for the UBSHW site visits was to observe and document releases to surface water. The UBSHW employee's failure to make a finding of "sloughing of tailings" in his initial report, is equivalent to writing a history of the Civil War and omitting the Battle of Gettysburg. Thus, from these facts and without other explanation, the revised UBSHW memorandum appears to be a knowingly false representation made to the United States, prosecutable under 18 U.S.C. § 1001.

Congress has directed that EPA "accurately assess the relative degree of risk to human health and the environment posed by sites." 42 U.S.C. § 9605(c)(1) [emphasis added]. An accurate assessment cannot be produced from unsubstantiated conjecture, particularly when such conjecture contradicts the quantified, analytical data which EPA has gathered from the site.

Because of the very serious nature of this proposed NPL listing, the EPA, in its zeal to list the site, should not allow subjective, inaccurate, unquantifiable and unsubstantiated recollections (which in the case of the UBSHW memorandum are inconsistent with its prior written memorandum) to override the documented, quantified, analytical data in the 1989 Supplemental Site Inspection Report. A detailed discussion of these unsubstantiated conjectures which EPA has erroneously scored as "observed releases" is included in Section III below.

II. THE FLOODPLAIN SEDIMENTS AND THE TAILINGS IMPOUNDMENT ARE TWO DIFFERENT AND DISTINCT SITES.

In order to increase the HRS score for the Richardson Flat site and in order to ignore the responsibility of upstream landowners, including the U.S. Bureau of Land Management (owner of the upstream Silver Maple Claims site) and Park City (Prospector Square -- Silver Creek Tailings), for contaminants migrating downstream to the floodplain sediments, the EPA has now combined the floodplain sediments in Section 2, T.2S., R.4E., west of Silver Creek and the two Union Pacific Railroad grades (hereinafter the "Floodplain Sediments") with the Richardson Flat tailings

impoundment in Sections 1 and 2, T.2S., R.4E., located on the eastern side of Silver Creek (hereinafter the "Tailings Impoundment.") To determine the new HRS score for the Richardson Flat site, the EPA uses the Tailings Impoundment, then the Floodplain Tailings, and occasionally both sites, depending on which site yields the highest score. During its previous proposed listing of the Richardson Flat site, EPA had defined only the Tailings Impoundment as the Richardson Flat site.

The Floodplain Sediments and the Tailings Impoundment represent areas of distinct and significantly different origin, composition, location, containment situation, and land ownership, and should be treated as different sites. The Floodplain Sediments is an area where surface water sediments have become contaminated by the migration of upstream tailings. The Floodplain Sediments are composed of upstream tailings mixed with the natural fluvial sediments in Silver Creek. The Floodplain Sediments originated upstream from tailings located on the Silver Maple unpatented mining claims (BLM ownership) and the Silver Creek Tailings site (Prospector Square, Park City) and carried downstream in Silver Creek to the Floodplain.

The Silver Maple Claims are placer mining claims located on tailings materials within the Silver Creek floodplain approximately 1.5 miles upstream from the Floodplain Sediments. The BLM Preliminary Natural Resources Survey for the Silver Maple Claims (a copy of which is attached hereto as Exhibit A)

describes the tailings material in Silver Creek on the Silver Maple Claims as follows:

> Over time, the excessive material caused the creek to become a braided stream, filling in old channels and creating new ones as the stream tried to maintain its equilibrium. The "tailings" are thickest towards the west end and thin towards the east. Oxidization has occurred where the minerals have reacted to the surface water and air. A typical orange slime due to the organic interaction of iron oxides with the water exists in stagnant pools. . . . This material contains iron, lead and zinc sulfides.

Report attached to Memorandum dated November 18, 1986, from BLM District Manager, Salt Lake, to BLM State Director, at 2.

The 1989 Supplemental Site Investigation Report notes the very different composition and origin of the Floodplain Sediments and the Tailings Impoundment:

> Analytical results of floodplain tailings indicated notably higher concentrations of cadmium, lead, mercury and zinc as compared to tailings collected from the impoundment and from the south side of the diversion ditch. Surface water and sediment samples from Silver Creek in the vicinity of the floodplain tailings contained high levels of corresponding contaminants.
>
> Background surface water and sediment samples collected from Silver Creek and the Pace Homer Ditch indicated additional sources of inorganic contamination upgradient of sources discussed in this report.

1989 Supplemental Site Investigation Report at 22-23.

The Table below compares average concentrations of the 1989 Supplemental Site Investigation Report samples collected

from the Floodplain Sediments and the Tailings Impoundment and illustrates their different composition:

Analysis (in mg/Kg)	Floodplain Sediments RFT-TA-4 & 5	Tailings Impoundment RFT-TA-1, 2 & 3
Antimony	132.0	78.2
Cadmium	183.5	52.7
Calcium	19,100	53,233
Chromium	< 0.65	5.6
Iron	92,200	44,867
Lead	20,450	3,387
Magnesium	641	17,567
Manganese	232	1,833
Mercury	7.9	1.06
Selenium	42.1	18.5
Silver	88.9	17.7
Zinc	25,000	7,677
pH (soil)	2.0	6.24

From this 1989 EPA sampling, a significant difference between the two sites is apparent, with the Floodplain Sediments having much higher concentrations of Sb, Cd, Fe, Pb, Hg, Se, Ag, and Zn, while the Tailings Impoundment has higher concentrations of Ca, Cr, Mg, Mn, and pH.

In a July 20, 1990 Memorandum from Susan Kennedy, E&E FIT, to Gregory Oberley, EPA NPL Coordinator (a copy of which is attached hereto as Exhibit B), Ms. Kennedy states that Dr. Werner Raab of MITRE Corporation believes upstream areas of Silver Creek (Silver Maple Claims and Prospector Square) to be the source of downstream contamination:

> In a telephone conversation with Werner Raab of MITRE Corporation (7/16/90), Werner indicated to me he is not convinced, based on current data, that contamination detected in RFT-SW-6 and RFT-SW-7 is attributable to Richardson Flat Tailings [Tailings Impoundment]. His contention is based on the

> potential for upstream contamination in Silver Creek to wash into the marsh during flood events. For this reason, I have not included in the documentation record any measurements provided by the State which are based on the assumption that RFT-SW-6 and RFT-SW-7 are contaminated due to Richardson Flat Tailings.

Memorandum at 1-2.

Thus, the Floodplain Sediments are an area of contamination migration from an upstream source. The Tailings Impoundment is a separate site, with tailings from a specific mine which were impounded in an impoundment permitted and approved by the Utah Department of Health. (See Construction Permit attached hereto as Exhibit C.)

An examination of the Sample Location Map (second Figure 2) in the 1989 Supplement Site Inspection Report shows the separate and unrelated locations of the two sites. The Tailings Impoundment is located more than 500 feet east of Silver Creek and east of and across two elevated railroad grades, while the Floodplain Sediments are located west of Silver Creek, between the access road and the western railroad grade.

The new HRS defines a "source" as follows:

> Any area where a hazardous substance has been deposited, stored, disposed or placed. . . . Sources do not include those volumes of air, groundwater, surface water, or surface water sediments, that have been contaminated by migration.

40 C.F.R. Part 300, App. A § 1.1. Thus, the Floodplain Sediments are not a "source" but are surface water sediments contaminated by migration.

The new HRS also defines "site" as the "area where a hazardous substance has been deposited, stored, disposed, or placed" and that "such areas may include multiple sources." Id. The SI/HRS Information Bulletin dated April 1989 further defines "site" as "an aggregation of sources (i.e., where the wastes were deposited, placed or stored) rather than . . . the extent of contamination, including migration." Directive No. 9200.5-302 at 2.

Therefore, the Tailings Impoundment site cannot be combined with the Floodplain Tailings, an area of surface water sediment migrating from a separate, upstream source on Silver Creek. In order to accurately evaluate the risks to human health and the environment, these two areas of different composition, origin, location, containment, and ownership, must be treated as separate entities and not as a single site.

III. EPA'S HRS SCORE IS BASED UPON SIGNIFICANT FACTUAL ERRORS, UNSUBSTANTIATED CONJECTURE, AND INCORRECT ASSUMPTIONS.

EPA's HRS score for the Richardson Flat site, as prepared for EPA by E&E, is seriously flawed by unsubstantiated conjecture, significant factual errors, and incorrect assumptions. When such errors are made in the scoring of a site, the site should be rescored before such errors cause the site to be erroneously added to the NPL. See 132 Cong. Rec. S14935-36 (daily ed. Oct. 3, 1986) (statements of Senators Chiles and Stafford).

Consequently, the independent environmental consultants Pioneer Technical Services, Inc., Butte, Montana ("PTS") have rescored the Richardson Flat site using correct factual

information and assumptions pursuant to the guidelines and instructions in the HRS Final Rule, 55 Fed. Reg. 51532 (Dec. 14, 1990), Appendix A to 40 C.F.R. Part 300 (the "new HRS"). PTS's report, scoring and data sheets are attached hereto and incorporated herein as Exhibit D.

The following is a discussion of the factual errors and incorrect assumptions which were made in the preparation of EPA's new HRS score for the site and the correction of these significant errors. This discussion follows, line by line, the HRS Documentation Record Scoresheets (Tables 4-1 and 6-1) provided by EPA for the scoring of the Richardson Flat Tailings site.

SURFACE WATER MIGRATION PATHWAY SCORESHEET (TABLE 4-1)

Drinking Water Threat

Likelihood of Release

Line 1. Observed Release

The new HRS provides that an "observed release" is established either "by direct observation of the release of a hazardous substance into the media being evaluated" or by chemical analysis through "analytical evidence of a hazardous substance in the media significantly above the background level." 40 C.F.R. Part 300, App. A § 2.3.[2/]

2/ The new HRS also provides that, in order to establish a direct observation of an observed release to surface water, a hazardous substance must have been seen entering surface water through migration, through direct deposition, or through contact with flood waters, or entry of the hazardous substance into surface water is demonstrated by evidence

Footnote continued on next page.

In its scoring of the site, the EPA contrives an "observed release" of tailings that it reports "appear to be slumping" into Silver Creek and an "observed release" of tailings that it reports are "sloughing" into the Diversion Ditch. Neither of EPA's contrived "observed releases" is supported by any analytical data, neither has been subsequently verified by any empirical, quantitative evidence, and neither meets the definition of an "observed release" in the new HRS.

Most importantly, EPA's own analytical data gathered by the Field Investigation Team ("FIT") for EPA at the site in 1989, for the 1989 Supplemental Site Inspection Report, shows that an observed release to surface water cannot be documented at the site by sampling and chemical analysis. Indeed, EPA has explicitly shown that there is not a demonstrated release of hazardous substances to surface water that is attributable to the site. The primary purpose of the 1989 Supplemental Site Inspection was to verify and document a release of hazardous substances into the surface water.[3/] However, the 1989 Supplemental Site Inspection Report concludes:

Footnote continued from previous page.

which demonstrates the adverse effects associated with the release of the hazardous substance. 40 C.F.R. Part 300, App. A, § 4.1.2.1.1.

3/ 1989 Supplemental Site Investigation Report at pp. 1-2 and 5.

> Analytical results of surface water and sediment samples collected from Silver Creek and the diversion ditch do not support an observed release of contaminants to surface water.
>
> * * *
>
> In summary, no observed release of contaminants attributable to the site has been clearly documented.

1989 Supplemental Site Inspection Report at 21 and 23.

An examination of the 1989 analytical data provides the same conclusion: EPA has explicitly shown that there is not a demonstrated release of hazardous substances to surface water that is attributable to the site. Surface water samples and stream sediment samples from Silver Creek and the Diversion Ditch, collected for the 1989 Report and collected previously by the USGS[4/] and United Park,[5/] show that metal concentrations are higher in the upstream background samples and decrease in the downstream samples. Therefore, there is no release from the site.

EPA has conducted no further sampling and analysis at the site since the 1989 Supplemental Site Inspection, yet, in

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4/ USGS, 1987. Draft Quarterly Report for Silver Creek Tailings Site Investigation, Park City, Utah. Prepared by the U.S. Geological Survey as part of a cooperative study with the Utah Division of Environmental Health.

5/ PTS Report, April 3, 1992 (attached hereto as Exhibit D) p. II-2, Table 2; MSE, Inc., HRS Evaluation for Richardson Flats Tailings, Park City, Utah, Prepared for United Park City Mines Co. (August, 1988) at pp. 4-11. A copy of the MSE, Inc. 1988 Report (pp. 4-11) is attached hereto as Exhibit E.

direct contradiction to the conclusion of the 1989 Supplemental Site Inspection Report, EPA scores two "observed releases" to the surface water by means of unsubstantiated conjecture and speculation.

There is No Observed Release of a Hazardous Substance into Silver Creek.

EPA attempts to reverse its findings in its own 1989 Supplemental Site Inspection Report and to document an observed release into Silver Creek, with only the following: (1) two 4" x 6" photographs, (2) aerial photographs, and (3) a two-sentence record of conversation on May 16, 1991, with an E&E employee who visited the site for the July 18-20, 1989 Supplement Site Inspection, as to his memory "to the best of [his] recollection" of the presence of any tailings in the floodplain on Silver Creek -- not of his memory of any release into Silver Creek.

EPA's two photographs which allegedly document the release are contained in EPA's Reference 20, entitled "Supplemental Photo Log for Sample Collection Along Silver Creek Flood Plain Tailings," and were not included in the 1989 Supplemental Site Inspection Report. Photo 2 of EPA Reference 20 shows a FIT member, standing in Silver Creek, collecting samples. This photograph documents two things: (1) that the FIT member is standing in Silver Creek, upstream and up-current from where he is taking samples (he is facing north and the stream flows from south to north at this location) -- certainly not an acceptable

sampling technique; and (2) that there is some yellowish/orange material behind the FIT member. The caption on Photo 2 states:

> Northwest facing photo of FIT personnel collecting samples RFT-SW/SE-2 from Silver Creek. Note: Yellowish orange tailings material (located behind the FIT member standing in Silver Creek stream channel) visibly slumping into Silver Creek.

Because of the angle and position of the camera for Photo 2, the Silver Creek stream channel is not clearly visible in Photo 2 and the yellowish-orange material appears to be much closer to Silver Creek than it actually is. However, in another photograph of the FIT personnel collecting samples at the same RFT-SW/SE-2 sampling location, in which the Silver Creek stream channel is clearly visible (see Exhibit F photograph attached hereto), there is no yellow/orange material "visibly slumping into Silver Creek" -- only mature vegetation lining the stable banks of the creek (note the FIT flag on the right-hand side of the creek marking the RFT-SW/SE-2 sampling location). EPA's use of Photo 2 with its accompanying caption to document an "observed release by direct observation" is a misrepresentation of fact by contrived documentation.

Second, EPA's aerial photographs do not document an observed release by direct observation. It is physically impossible to "observe releases" on an aerial photograph (EPA's References 7 and 8), especially on the scale of the air photos and with the nature of the contaminant medium (tailings materials

entrained by the stream would look no different in aerial photographs than natural sediment).

Likewise, the two-sentence record of a May 16, 1991 conversation with an E&E employee, who visited the site July 18-20, 1989, does not document an observed release by direct observation. The E&E employee was a member of the FIT that performed sampling at the site in July 1989 for the 1989 Supplemental Site Inspection. As discussed above, the purpose of the 1989 Supplemental Site Inspection was to document a release to surface water, but the 1989 Supplemental Site Inspection Report concluded that there was no such release. Certainly, if a FIT member had visually observed a release, he would have sampled the released material to verify that it was a hazardous substance and would have documented the release in the 1989 Supplemental Site Inspection Report.

Therefore, the 1989 Supplemental Site Inspection Report is the best evidence of any release (or lack of release) observed during the 1989 Supplemental Site Inspection, not the "recollection," two years later, of an E&E employee.

Also, the E&E employee, in the May 15, 1991 conversation, did not say that he had visually observed the release of a hazardous substance into Silver Creek in July 1989. He indicated that "to the best of [his] recollection," the tailings extended into Silver Creek. However, his "recollection" is inaccurate. The tailings material sample taken closest to Silver Creek was located more than 50 feet away from the creek; this material was

not "slumping" into the creek and was not in contact with the creek. See 1989 Supplemental Site Inspection Report, Ref. 4, Table 3 and second Figure 2 (Sample Location Map). Even EPA's Sample Location Map (1989 Supplemental Site Inspection Report, the second Figure 2) does not show tailings in contact with Silver Creek.

Consequently, there is no observed release, by either direct observation or by chemical analysis, of a hazardous substance entering Silver Creek.

There Is No Observed Release of a Hazardous Substance into the Diversion Ditch.

In direct contradiction to its own 1989 Supplemental Site Inspection Report, EPA attempts to create an observed release in the Diversion Ditch by means of the following: (1) aerial photographs; (2) three 4" x 6" on-site photographs; (3) an unsubstantiated statement in the HRS scoring package; and (4) an uncorroborated and inconsistent UBSHW memorandum.

As discussed above, it is physically impossible to "observe releases" by direct observation in aerial photographs because of the scale of the photographs and because tailings materials entrained in the Diversion Ditch would look no different in aerial photographs than natural sediment.

The on-site photographs (EPA Ref. 4, Photos 1, 2, and 3) also do not show tailings being released to surface water. They do not depict any active "slumping" of tailings materials as described in the HRS scoring package.

The materials alleged to be slumping into the Diversion Ditch were assumed to be tailings (light gray in color and medium to fine-grained texture according to EPA Reference 4), but such materials are primarily alluvial materials. The alluvium is derived from local tan to gray volcanic rocks and has a grayish tan color. The Diversion Ditch does not flow "through" the Tailings Impoundment; it was designed to divert naturally occurring surface runoff around the Tailings Impoundment. The Diversion Ditch intersects the underlying materials and is constructed in the underlying materials, pursuant to the direction and approval of the Utah Department of Health. The physical appearance of both tailings and the alluvial materials is similar (tan to gray sands and silts), so the alluvium is easily mistaken for "tailings." Since no samples were collected of the alleged slumping material, identifying it as "tailings" is pure conjecture.

Likewise, the source characterization samples collected for analysis were not taken from the allegedly "slumping" materials. The closest sample taken was located more than 400 feet southeast of the UBSHW's location of the allegedly "slumping" material. Obviously, there are tailings at the Richardson Flat site; the issue is whether tailings are being released into the surface water. The sampling and analysis of the allegedly "observed" slumping material is necessary in order to prove that this material is actually tailings rather than the alluvial material. Just because the material appears visually similar to tailings does not constitute proof that it is tailings.

In direct contradiction to its 1989 Supplemental Site Inspection Report which concluded that there was no observed release to the diversion ditch based on the July 18-20, 1989 site investigation, EPA states in the HRS scoring package: "Observations made during the July 18-20, 1989 site inspection indicated an observed release to the diversion ditch by direct observation." EPA does not identify the person who saw this release nor is this release supported by any documentation. Certainly this "observed release" is not documented in the 1989 Supplemental Site Inspection Report which was designed to find an observed release to surface water. EPA's only documentation is a photograph (EPA's Ref. 4, Photo 3) which does not show any "visible sloughing" as described by EPA. No field log book copies were provided by EPA to substantiate this release by direct observation. Furthermore, this alleged "release" was not seen by three other people who accompanied the FIT members during the July 18-20, 1989 site inspection. Edwin L. Osika, Jr., Kerry Gee, and William J. Bullock accompanied the FIT members at all times during the July 18-20, 1989 Supplemental Site Inspection, and none of these three people observed the alleged "release" to the surface water in the Diversion Ditch, nor was such a "release" pointed out to them by any member of the FIT. The Affidavits of Messrs. Osika, Gee, and Bullock are attached hereto as Exhibits G, H, and I, and incorporated herein by reference.

Finally, the EPA relies upon the inconsistent and uncorroborated statement of a UBSHW employee who made visual

inspections (no sampling or testing) of the Richardson Flat site with United Park personnel on June 7 and 14, 1990. By transmittal letter dated June 25, 1990, a copy of the UBSHW employee's finalized Memorandum dated June 18, 1990, reporting on the "Richardson Flat Site visits on June 7, and June 14, 1990," was mailed to United Park. (A copy of the June 25, 1990 transmittal letter and June 18, 1990 Memorandum are attached hereto as Exhibit J.) The June 18, 1990 Memorandum describes the purpose of the site visits "to determine if the potential for contaminant releases from the site to the Silver Creek (surface water) exists." The June 18, 1990 Memorandum then states that the following observations were made by UBSHW personnel during the site visits: (1) measurements of the slope of the dike; (2) measurements of the slope of the intervening terrain; (3) the size and direction of the channel of the Diversion Ditch; and (4) the distance between the toe of the tailings pond dike and Silver Creek. The June 18, 1990 Memorandum does not state that UBSHW personnel observed any release of a hazardous substance into surface water nor that tailings were observed sloughing into the Diversion Ditch. Indeed, there is no mention of any observed release in the June 18, 1990 Memorandum.

Nevertheless, by transmittal letter dated September 20, 1990, a copy of the UBSHW employee's revised Memorandum reporting on the "Richardson Flat Site visits on June 7, and June 14, 1990" (the "Revised Memorandum") was mailed to United Park. The Revised Memorandum is dated July 6, 1990 on the first page;

however, the second page is dated July 9, 1990 (bottom left hand corner) and the third page is dated August 6, 1990 (bottom left hand corner). Therefore, it appears that the Revised Memorandum was created over a period of two months after the site visits. (A copy of the September 20, 1990 transmittal letter and the Revised Memorandum are attached hereto as Exhibit K.)

The Revised Memorandum introduces an "observed release" into the UBSHW employee's prior observations with the following added language: "The sloughing of tailings into the diversion ditch was observed" (Revised Memorandum at 2) and "tailings were observed sloughing into the Diversion Ditch" (Revised Memorandum, at 3; this language is used in the first paragraph and repeated in the second paragraph). There is little detail or variety in this description of the "observed release," and the passive voice is always used so that the "observer" need not be identified. A new map is also added to the Revised Memorandum which coincidentally identifies the location of the "observed release" as the very spot where the UBSHW employee mistakenly believed the July 1989 FIT had taken tailings sample RFT-TA-3. A comparison of the June 18, 1990 Memorandum and the Revised Memorandum reveals that the "observed release" was created, with very little imagination, by the author of the Revised Memorandum.

Moreover, Edwin L. Osika, Jr., and Kerry Gee, who accompanied the two UBSHW employees at all times during the June 7 and 14, 1990 site visits, did not observe any "sloughing of tailings into the Diversion Ditch" nor did the UBSHW employees

call attention to or indicate their observation of any "sloughing of tailings into the Diversion Ditch" or any other release to surface water. See Affidavits of Messrs. Osika and Gee attached hereto as Exhibits G and H and incorporated herein by reference.

In addition, the unidentified UBSHW employee who allegedly observed the "sloughing of tailings into the Diversion Ditch" took no sample of the "sloughing" material. The Revised Memorandum conveniently states that "tailings were observed sloughing" from the 1989 FIT's RFT-TA-3 sampling site, which sampling site is located (incorrectly) west of and adjacent to United Park's slurry pipe and near the Diversion Ditch on UBSHW's Figure 1 Map attached to the Revised Memorandum.

However, sampling site RFT-TA-3 of the 1989 Supplemental Site Inspection is not located west of and adjacent to United Park's slurry pipe or near the Diversion Ditch. Sampling site RFT-TA-3 is located over 400 feet to the southeast of the point where it is incorrectly shown on UBSHW's Figure 1 Map and on the Sample Location Map in the 1989 Supplemental Site Inspection Report (EPA's Ref. 4, the second Figure 2).

The best evidence of the location of sampling site RFT-TA-3 is EPA's own Photo 4, captioned "South Facing Photo of FIT Member Collecting Tailings Sample RFT-TA-3," in the 1989 Supplemental Site Inspection Report (EPA's Ref. 4, Photo 4). United Park's Map, entitled "Correct Location of Sample RFT-TA-3" and attached hereto as Exhibit L, accurately reflects the location of sample RFT-TA-3 and of EPA's Photo 4.

As revealed in EPA's Photo 4, the actual site of sample RFT-TA-3 is in a different location from that identified on the UBSHW and 1989 FIT maps and in UBSHW Photo 2 (a photograph showing the slurry line). EPA's Photo 4 shows sample RFT-TA-3 being taken in a depression with a mound of naturally occurring alluvial material clearly depicted in the right of the photograph. This mound of alluvial material separates the actual sampling location of RFT-TA-3 from the purported sampling site referenced in UBSHW's Figure 1 Map, UBSHW's Photo 2, and the 1989 FIT's Sample Location Map. Therefore, the material which is located at the purported sampling location cannot be characterized as the same material as that in the area where sample RFT-TA-3 was actually taken.

Since the UBSHW employee took no sample of the material he allegedly observed "sloughing into the Diversion Ditch," no samples had previously been taken at the location which he identifies as the site of the "sloughing," and the natural alluvium in the area can visually be mistaken for "tailings," the UBSHW employee could not possibly have known, from only his visual observation, whether the material was a hazardous substance.

Consequently, there is no observed release, by either direct observation or by chemical analysis, of a hazardous substance entering the Diversion Ditch.

Because there is no observed release to surface water either in Silver Creek or in the Diversion Ditch, the observed

release score should be zero (0), and the potential to release scenario should be evaluated.

Line 2. Potential to Release by Overland Flow

No overland flow route is available for the Tailings Impoundment due to the containment structures built on the site. The Tailings Impoundment has a maintained cover, run-on controls (diversion ditches) and run-off controls (berms) in place to insure that any rainfall that falls on the tailings will not run-off and that none will run-on to the tailings.[6/] The HRS final rule states that for this containment situation, the potential to release value should be assigned 0. However, the Floodplain Sediments are evaluated for potential to release by overland flow.

Line 2a. Containment

The Floodplain Sediments have no containment structures in place; hence, the assigned value is 10.

Line 2b. Runoff

The two-year, 24-hour rainfall for the area is 1.40 inches (NOAA). The drainage area for the Floodplain Sediments is estimated (by EPA FIT) at approximately 269,500 square feet or 6.2 acres, which yields an assigned value of 1 from Table 4-3. The soil group for the Floodplain Sediments is a silty-sand,

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6/ Dames and Moore, Report of Embankment and Dike Design Requirements, Proposed Tailings Pond Development near Park City, Utah. Prepared for Park City Ventures, March, 1974.

assigned a soil group designation of B (medium textured, Table 4-4). Tables 4-5 and 4-6 yield a runoff factor value of zero (0).

Line 2c. Distance to Surface Water

The Floodplain Sediments, using an overland flow route, are within 100 feet of surface water, which yields an assigned value of 25 (Table 4-7).

Line 2d. Potential to Release by Overland Flow

[lines 2a x (2b + 2c)]

For Tailings Impoundment: [0 x (0 + 25)] = 0

For Floodplain Sediments: [10 x (0 + 25)] = 250

Line 3. Potential to Release by Flood

Line 3a. Containment (flood)

The Tailings Impoundment is within the 500-year floodplain of Silver Creek[7/] and the Diversion Ditch and containment structures are designed to withstand a 100-year event (Dames and Moore, 1974). The Floodplain Sediments are within the 10-year floodplain (FEMA, 1986) and have no containment structures. Both can be assigned values of 10 for containment; the Tailings Impoundment for the 500-year event; the Floodplain Sediments for the 10-year event.

7/ FEMA, 1986. FIRM Flood Insurance Rate Map, Summit County, Utah (unincorporated areas). Panel 525 of 625, Community Panel. Number 490134 0525 B. Effective Date: July 17, 1986. Federal Emergency Management Agency.

Line 3b. Flood Frequency

The Tailings Impoundment is in the 500-year floodplain, assigned value = 7. The Floodplain Sediments are in the 10-year floodplain, assigned value = 50.

Line 3c. Potential to Release by Flood (lines 3a x 3b)

For Tailings Impoundment: (10 x 7) = 70

For Floodplain Sediments: (10 x 50) = 500

Line 4. Potential to Release (lines 2d + 3c), maximum of 500.

For Tailings Impoundment: (0 + 70) = 70

For Floodplain Sediments: (250 + 500) = 750 (Max. = 500)

Line 5. Likelihood of Release (higher of lines 1 or 4)

For Tailings Impoundment, the higher score is 70

For Floodplain Sediments, the higher score is 500

Waste Characteristics

Line 6. Toxicity/Persistence

The technically correct evaluation for toxicity should be to evaluate substances in the form in which they exist on the site. The form of the metals is important with respect to toxicity, since the metals in the tailings are primarily sulfide compounds, not metals in their elemental forms as assumed by the HRS scoring. Sax, Dangerous Properties of Industrial Materials (5th ed. at p. 1000 and 6th ed. at p. 2482) states: "Sulfides of the heavy metals are generally insoluble and, hence, have little toxic action except through the liberation of hydrogen sulfide."

The sulfide compounds exist as a constituent of the tailings. When EPA's analysis of the tailings is made for heavy

metals, the results show that heavy metals are present. However, this analysis does not show the form of the metal; the metal is not in its free state or elemental form, but is a part of a compound. Therefore, the toxicity and concentration of the compound as a constituent of the tailings should be used when assessing the threats posed by any release. Using only the element to assess these threats is misleading and would be similar to analyzing table salt for sodium and chlorine or dental amalgam for mercury. Both contain highly toxic elements but, when combined with other elements to form compounds, the toxicity is greatly reduced.

However, the HRS does not consider the form of metal in its toxicity evaluation, instead it relies on a table of values for the elemental forms (EPA Ref. 2). For lead and arsenic, toxicity is assigned as 10,000 and persistence as 1 for toxicity/persistence factor value of 10,000 (Table 4-12).

Line 7. Hazardous Waste Quality

For the Tailings Impoundment: Using the Tier D formula, the quantity was calculated by EPA as 6,535,375 sq. ft. (from aerial photos)/13 = 502,271, which yields a factor value of 10,000.

For the Floodplain Sediments: Again using the Tier D formula, the quantity was calculated by EPA as 269,500 sq. ft. (from aerial photos). The Floodplain Sediments were scored by EPA as "piles" (Table 2-5) which they most certainly are not. Since the Floodplain Sediments are a mixture of natural fluvial

sediments and tailings materials from upstream sources, the more applicable waste type for use in Table 2-5 is "contaminated soil." Using the estimated area of 269,500 sq. ft. and dividing by the contaminated soil measure of 34,000 yields 7.9265. This translates (Table 2-6) to a hazardous waste quantity factor value of 1.

Line 8. Waste Characteristics

The factor value is determined by multiplying lines 6 and 7, then assigning a value from Table 2-7.

For the Tailings Impoundment:

$10,000 \times 10,000 = 1 \times 10^8$; assigned factor value is 100.

For the Floodplain Sediments:

$10,000 \times 1 = 10,000$; assigned factor value is 10.

Targets

Line 9. Nearest Intake

The correct score is 0, per EPA.

Line 10. Population

The correct score is 0, per EPA, for lines 10 a, b, c, and d.

Line 11. Resources

James W. Carter, Park City Municipal Corporation Attorney, in a telephone conference of March 12, 1992, with Rosemary J. Beless (a record of this communication is attached hereto as Exhibit M), confirmed that Park City Municipal Corporation ("Park City"), under a Stipulated Decree entered in a lawsuit between Park City and the Pace and Gillmor families, compensates the

Paces and Gillmors for crop loss due to the inability of Park City to deliver sufficient irrigation water through the Pace-Homer ditch and Silver Creek to the Paces and Gillmors. The Paces and Gillmors then use the crop-loss payments from Park City to purchase feed from the Snowville, Utah area for their animals. This Stipulated Decree has been in effect for at least four years and will be in effect for the foreseeable future. Therefore, little, if any, water diverted from Silver Creek is used to produce forage for livestock on the Standley Pace, Angus Pace, and James Gillmor pastureland. Forage for their livestock is purchased in Snowville, Utah, and paid for by Park City.

Moreover, the References cited by EPA do not verify any commercial use of land irrigated by Silver Creek. Nevertheless, a resources factor value of 5 is assigned, as per EPA.

Line 12. Targets (lines 9 + 10d + 11)

(0 + 0 + 5) for a total Targets value of 5.

Drinking Water Threat Score

Line 13. Drinking Water Threat Score ([lines 5 x 8 x 12]/82,500, subject to a maximum of 100)

For the Tailings Impoundment:

score is [(70 x 100 x 5)/82,500] = **0.42**

For the Floodplain Sediments:

score is [(500 x 10 x 5)/82,500] = **0.30**

Human Food Chain Threat

Likelihood of Release

Line 14. Likelihood of Release (same value as line 5)

See above discussion for line 1 regarding the lack of an "observed release," and calculation for lines 2 through 5 on potential to release. Scores are the same as calculated for line 5:

For the Tailings Impoundment: the score is 70

For the Floodplain Sediments: the score is 500

Waste Characteristics

Line 15. Toxicity/Persistence/Bioaccumulation

It is inconsistent to use mercury as the contaminant of concern, just because it has a high bioaccumulation factor, rather than using arsenic or lead which occur at much higher concentrations. However, this is in accordance with the HRS final rule, using the highest scoring compound to figure this factor. Per EPA's HRS Reference 2, mercury has a toxicity factor of 10,000 and a persistence factor of 1, resulting in a toxicity/persistence value of 10,000; mercury has a bioaccumulation value of 50,000. From Table 4-16, the resultant value for this line is 5×10^8.

Line 16. Hazardous Waste Quantity

The HRS final rule instructions assign the same values here as in Line 7 above:

For the Tailings Impoundment: the score is 10,000

For the Floodplain Sediments: the score is 1

Line 17. Waste Characteristics

Calculating the factor category value per the instructions: ([toxicity/persistence value x line 16, maximum of 1×10^8] x the bioaccumulation value, with a maximum of 1×10^{12}) yields the following:

For the Tailings Impoundment:

$10,000 \times 10,000 \times 50,000 = 5 \times 10^{12}$, since the maximum is 1×10^{12}, the assigned value from Table 2-7 is 1,000

For the Floodplain Sediments:

$10,000 \times 1 \times 50,000 = 5 \times 10^8$, the assigned value from Table 2-7 is 100

Targets

Line 18. Food Chain Individual

Since the criteria for an observed release to surface water have not been met (see above discussion for line 1), no Level II contamination has been documented and the score assigned by EPA (45) is invalid.

The documentation provided by EPA includes no data supporting the existence of a fishery in Silver Creek. Indeed, EPA Reference 30 includes a Utah State Division of Fish and Game Stream Survey of Silver Creek, dated July 15, 1970, performed by electroshocking, which states that "no games species" were found in Silver Creek. Likewise, in telephone communications on March 20, 1992 and March 26, 1992, Kent Summers of the Utah Division of Wildlife Resources stated that he conducted the last fishery study of Silver Creek in 1986 and that study found no game fish

anywhere in Silver Creek. (See Records of Communication with Mr. Summers attached hereto as Exhibits N and O.) Consequently, the quantitative data shows there is no fishery in Silver Creek.

Due to the lack of either a documented observed release or an established fishery, the correct assigned value for the food chain individual threat is zero (0).

Line 19a. Level I Concentrations

The correct score is 0, per EPA.

Line 19b. Level II Concentrations

The correct score is also 0, per EPA.

Line 19c. Potential Human Food Chain Contamination

Since a fishery has not been established in Silver Creek (see above discussion for line 18), annual production of game fish is assigned as zero (0), and the resultant human food chain population value for Silver Creek (Table 4-18) should also be 0, not 0.03 as scored by EPA. However, a fishery has been established in the Weber River within the 15-mile limit, and the population value of 0.3 and a dilution weighting of 0.01 are correctly assigned. Summation of the values equals 0.003 and division by 10, as directed by the HRS Final Rule, yields a population factor of **0.0003**, not 0.0033, as calculated by EPA.

Line 19d. Population (lines 19a + 19b + 19c)

(0 + 0 + 0.0003) for a total population value of 0.0003

Line 20. Targets (lines 18 + 19d)

(0 + 0.0003) for a total targets value of 0.0003

Human Food Chain Threat Score

Line 21. Human Food Chain Threat Score [(lines 14 x 17 x 20)/82,500, subject to a maximum score of 100]

For Tailings Impoundment:

(70 x 1000 x 0.0003) / 82,500 = 0.00025

For Floodplain Sediments:

(500 x 100 x 0.0003) / 82,500 = 0.00018

Environmental Threat

Likelihood of Release

Line 22. Likelihood of Release (same value as line 5)

See above discussion for line 1 regarding the lack of an "observed release" and calculations for lines 2 through 5 on potential to release. Scores are the same as calculated for line 5:

For Tailings Impoundment: score is 70.

For Floodplain Sediments: score is 500.

Waste Characteristics

Line 23. Ecosystem Toxicity/Persistence/Bioaccumulation

Again, it is inconsistent to use mercury as the contaminant of concern, just because it has the highest factor value; however, this is in accordance with the HRS Final Rule, using the highest scoring compound to figure this factor. For mercury: Ecosystem Toxicity/Persistence is 10,000; Ecosystem Bioaccumulation Potential is 50,000; yielding an Ecosystem Toxicity/Persistence/Bioaccumulation Factor of 5.0×10^8.

Line 24. Hazardous Waste Quantity

The HRS Final Rule assigns the same value here as in Line 7 above:

For Tailings Impoundment: score is 10,000.

For Floodplain Sediments: score is 1.

Line 25. Waste Characteristics

Calculating the factor category value per the instructions: ([ecosystem toxicity/persistence value x line 24, maximum of 1×10^8] x the ecosystem bioaccumulation value, with a maximum of 1×10^{12}) yields the following:

For Tailings Impoundment: $10,000 \times 10,000 \times 50,000 = 5 \times 10^{12}$, since the maximum is 1×10^{12}, the assigned value from Table 2-7 is 1,000.

For Floodplain Sediments: $10,000 \times 1 \times 50,000 = 5 \times 10^8$ and the assigned value from Table 2-7 is 100.

Line 26. Sensitive Environments

The only sensitive environments are wetlands.

Line 26a. Level I Concentrations

The correct score is 0, per EPA.

Line 26b. Level II Concentrations

EPA assigned this line a value of 50 based again on the alleged "observed release" of contaminants to surface water. As discussed above for Line 1, EPA's own sampling data show no observed release and none has been otherwise documented; hence, the correct value for this line is 0.

Line 26c. Potential Contamination

The wetlands frontage calculated by EPA for the Richardson Flat Tailings site is grossly overestimated. Apparently, in a misinterpretation of the HRS instructions for calculating wetlands frontage, EPA's contractor counted virtually the entire length of both sides of the stream, which led to an absurd measurement of wetlands frontage and caused the maximum score of 500 to be assigned.

The HRS Final Rule clearly states (in Section 4.1.4.3.1.1) that:

> For rivers [and streams], use the length of the wetlands contiguous to the in-water segment of the hazardous substance migration path (that is, the wetlands frontage).

In other words, a wetlands contiguous to a stream is counted as a wetlands, but the stream itself (the in-water segment) is <u>not</u> counted as a wetlands. The "wetlands frontage" (any wetlands fronting on a stream) should be counted, but the stream itself should not be counted as a wetlands area. Therefore, if there is not a wetlands area next to a portion of a stream, there is <u>no</u> wetlands to be counted for that portion of the stream.

The wetlands inventory maps for Silver Creek downstream from the Richardson Flat Tailings site generally only designate the in-stream portion of the creek bottom (designated as PEMC) as wetlands and <u>not</u> "wetlands contiguous to the in-water segment" of the stream, which would satisfy the guidance given in the HRS Final Rule. Only "wetlands contiguous to the in-water segment"

of the stream should be counted for HRS purposes -- not the bottom of the stream.

Using the same wetlands inventory maps (EPA Refs. 16 and 16a) and correctly measuring only two-dimensional wetlands contiguous to the stream and only accounting for additional wetlands frontage when a wetlands area is, indeed, bisected by the stream, yields only 3.41 miles of wetlands bordering Silver Creek between the two sites and the Weber River (which includes the Diversion Ditch and Silver Creek one-half mile upstream from the confluence of the ditch). The Weber River segment borders a total of 1.7 miles of wetlands, counting both sides of the River. The appropriate values from Table 4-24 are as follows:

For the Diversion Ditch and Silver Creek segment: 3.41 miles of wetlands frontage is assigned a value of 100, and when multiplied by the dilution weighting for Silver Creek (1.0), yields a weighted value of 100.

For the Weber River segment: 1.70 miles of wetlands frontage is assigned a value of 50, and when multiplied by the dilution weighting for the Weber River (0.01), yields a weighted value of 0.5.

When these weighted values are summed and divided by 10 as directed, they yield a sensitive environments score of 10.05, not the score of 50.05 calculated by EPA.

Line 26.d. Sensitive Environments (lines 26a + 26b + 26c)

(0 + 0 + 10.05) for a total score of 10.05

Line 27. Targets (value from line 26d)

The correct value for total targets is 10.05.

Environmental Threat Score

Line 28. Environmental Threat Score [(lines 22 x 25 x 27) / 82,500, subject to a maximum score of 60]

For Tailings Impoundment:

(70 x 1000 x 10.05) / 82,500 = 8.53

For Floodplain Sediments:

(500 x 100 x 10.05) / 82,500 = 6.09

Surface Water Overland/Flood Migration Component Score--Watershed

Line 29. Watershed Score (lines 13 + 21 + 28, subject to a maximum of 100)

For Tailings Impoundment:

(0.42 + 0.00025 + 8.53) = 8.95025

For Floodplain Sediments:

(0.30 + 0.00018 + 6.09) = 6.39018

Surface Water Overland/Flood Migration Component Score

Line 30. Component Score (S_{of}) (highest score from line 29 for all watersheds evaluated)

Since only one watershed was evaluated, the component scores for each site are as follows:

For Tailings Impoundment: score is 8.95025

For Floodplain Sediments: score is 6.39018

Conclusions--Surface Water Route

The above are the correct values and scores to be used for the evaluation of the Surface Water Overland/Flood Migration

Component of the overall HRS Site Score. These corrected values utilize complete, documented, and current site information, not the old, incorrect, incomplete, and undocumented information presented by EPA. The scores for either site are well below the EPA derived score of 100 for this pathway.

AIR MIGRATION PATHWAY SCORESHEET (TABLE 6-1)

Likelihood of Release

Line 1. Observed Release

Since the 1986 high volume particulate samples were collected, site conditions have been significantly altered. The surface of the Richardson Flat tailings has been almost entirely covered with topsoil material in order to prevent both windblown tailings and direct contact by trespassers. The entire Richardson Flat Tailings Impoundment is now completely fenced, as reflected upon United Park's Correct Location of Sample RFT-TA-3 Map, attached hereto as Exhibit L. Thus, access is completely controlled and no unauthorized persons are permitted on the site, thereby further limiting any potential exposure to the tailings.

EPA has acknowledged that scoring based upon current site conditions encourages rapid remedial actions, reducing risks to the public, and is, thus, consistent with the intent of CERCLA.[8/] At the Richardson Flat Tailings site, the potential for exposure to the tailings materials, both via the air pathway and the soil exposure pathway, has been significantly reduced by

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8/ 50 Fed. Reg. 51,567-68 (Dec. 14, 1990).

the capping of the tailings with clean topsoil and fencing. Therefore, scoring the site based on historic conditions (1986 data, References 11 and 11a) is inappropriate and not consistent with the intent of the new HRS.

Additionally, there are several concerns with the air sampling done by EPA's contractor in 1986. The only data used from the 5-day air sampling during July, 1986 was a twelve-hour period when local windstorms were strong enough to entrain some of the then uncovered tailings. This short sampling interval is not representative of either the direction or the magnitude of winds at the site, especially considering the remainder of the air sampling data collected during that week. Additionally, the insufficient number of samples and brief sampling duration do not adequately substantiate any risk to human health or the environment. EPA's contractor states that the air sampler that detected the "release" was placed 20 feet from the tailings on the tailings embankment, for the purpose of qualifying it as an "off-site" air sample, which it certainly is not.

The HRS Documentation package claims that the national Ambient Air Quality Standard (NAAQS) for lead (1.5 ug/M^3) was exceeded during a particular 12-hour period (one sample at one station had 1.65 ug/M^3 lead). Since the NAAQS is a quarterly (3-month) average, not a 12-hour standard, no such short-term standard exists. If the measurements for the downwind station (AM-04) are averaged over the 5-day sampling period in July, the resulting concentration is 0.38 ug/M^3, roughly 25% of the

quarterly standard. Calculated a different way, using the concentrations at various downwind stations (varied daily), yields an average concentration of 0.53 ug/M^3, still only 35% of the quarterly standard. In short, there is no evidence that NAAQS for lead were exceeded, even on-site prior to the capping effort. (There are no ambient air standards for Cd, As or Zn.) After the capping of the tailings, potential off-site receptors at more distant locations (e.g. Park City) can hardly be considered to have even the slightest increase in risk attributable to the Richardson Flat Tailings site.

The observed release to the air pathway should be scored 0 and the potential to release evaluated instead, using current site conditions.

Line 2. Potential to Release

Line 2a. Gas Potential to Release

Assigned a 0 since no materials meeting the vapor pressure criteria are on the site.

Line 2b. Particulate Potential to Release

Calculated based on three factors: containment (Table 6-9), source type (Table 6-4) and migration potential (Figure 6-2). The Tailings Impoundment is assigned a containment value of 7 (clean soil cover, between 1 and 3 feet thick); a source type value of 28 (tailings pile); and a migration potential of 11 (northeast Utah). The Floodplain Sediments are assigned a containment value of 10; a source type value of 22 (contaminated

soil), and a migration potential of 11. These result in particulate potential to release values of:

For Tailings Impoundment: (28 x 11) x 7 = 273

For Floodplain Sediments: (22 x 11) x 10 = 330

Line 2c. Potential to Release (higher of lines 2a and 2b)

For Tailings Impoundment: the higher value is 273

For Floodplain Sediments: the higher value is 330

Line 3. Likelihood of Release (higher of lines 1 and 2c).

For Tailings Impoundment: the higher value is 273

For Floodplain Sediments: the higher value is 330

Waste Characteristics

Line 4. Toxicity/Mobility

Toxicity factors have been assigned from Reference 2, and, again, do not represent actual toxicity associated with the compounds found on the site;[9/] rather, they represent the toxicity of individual elements that make up those compounds. For arsenic, cadmium and lead, those factors are set by the HRS at 10,000. Mobility factors for both sources are taken from Figure 6-3, since the observed release criteria used by EPA for this line do not represent current site conditions. The particulate mobility factor value for the area is 0.0008. The toxicity/mobility factor value from Table 6-13 is 8, not 20 as assigned by EPA.

9/ See Davis A., Ruby, M.V., and Bergstrom, P.D., "Bioavilability of Arsenic and Lead in Soils from the Butte, Montana Mining District," Environ. Sci. Technol., Vol. 26, No. 3, pp. 461-468 (1992).

Line 5. Hazardous Waste Quantity

The HRS Final Rule assigns the same value here as calculated earlier in Line 7 of the Surface Water Route Scoresheet:

For Tailings Impoundment: score is 10,000

For Floodplain Sediments: score is 1

Line 6. Waste Characteristics

Calculated by multiplying values on lines 4 and 5.

For Tailings Impoundment: 8 x 10,000 = 80,000 and the assigned value from Table 2-7 is 10.

For Floodplain Sediments: 8 x 1 = 8 and the assigned value from Table 2-7 is 1.

Targets

As described earlier for line 1, the 1986 observed release data is no longer applicable to current conditions at the site and all targets should be evaluated for potential contamination.

Line 7. Nearest Individual

The EPA assigned value is 2, for 1/4 to 1/2 mile.

Line 8. Population

Line 8a. Level I Concentrations

No Level I concentrations; assigned score is 0, per EPA.

Line 8b. Level II Concentrations

No Level II concentrations, assigned score is 0, per EPA.

Line 8c. Potential Contamination

Persons residing in Park City can hardly be exposed to particulates from the Richardson Flat Tailings site due to the intervening topography. However, the HRS does not consider this sort of physical phenomenon, only the distance is important.

EPA's HRS scoring not only disregards the intervening mountains, but also the substantial evidence in EPA's own Report that both Prospector Square (1.5 miles away) and central Park City (one mile beyond Prospector Square) are not affected by tailings from Richardson Flat. The 1988 Analytical Results Report for Ambient Air and Residential Characterization at Prospector Square, Park City, Utah, prepared for EPA by Dave Franzen, et al., E&E ("the 1988 Prospector Square Air Report") analyzed data collected on three sampling days when the Prospector Square tailings were downwind from the Richardson Flat tailings, in order to determine whether entrained metals from Richardson Flat contributed to contaminant levels at Prospector Square. The 1988 Prospector Square Air Report (p.23) concluded:

> The tailings pond at Richardson Flat did not appear to contribute to contaminant levels detected at Prospector Square on any of the sampling days that winds were recorded blowing from Richardson Flat to Prospector Square. It therefore appears that measurable levels of contaminants were not blown the 1.5 mile distance between the two sites by winds with average speeds of 10 to 30 miles per hour.

The airflow path between the Richardson Flat and Prospector Square sites is fairly unrestricted, while Richardson Flat

and Park City are separated by hills 400-600 feet high. No impacts from Richardson Flat were observed at Prospector Square during the 1987 sampling, hence impacts from Richardson Flat upon Park City would be highly unlikely (central Park City is at least one mile farther from Richardson Flat than is Prospector Square.)

The 1988 Prospector Square Air Report also examined variations in metal levels at various distances from the Prospector Square tailings site. The Report determined that mean lead concentrations 200 feet from the Prospector Square tailings site were 66.5% of those observed adjacent to the site. Assuming similar behavior at the Richardson Flat site, the highest lead level observed 200 feet off-site would be only 1.0958 ug/M^3 (versus the 1.6478 ug/M^3 level observed on site). This 12-hour reading would be considerably below the quarterly standard of 1.5 ug/M^3.

In summary, prior to the capping at Richardson Flat, while there was evidence that increased metals concentrations could occur immediately downwind of the Richardson Flat tailings, these were shown, by the 1988 Prospector Square Air Report, to be unmeasurable at a distance of 1.5 miles over unrestricted terrain. It was also shown that ambient lead levels, even during extreme conditions, decreased rapidly with distance off-site. There was no evidence that the National Ambient Air Quality Standards ("NAAQS") for lead were being violated, even on the Richardson Flat site itself.

The 1988 Prospector Square Air Report proves that no health hazard exists and no standards were exceeded in the

vicinity of Park City due to Richardson Flat tailings. Hence, that population should not be included as targets of an actual or potential release of airborne contaminants from Richard Flat tailings.

However, with the methodology used by EPA, which ignores actual, measured concentrations in the air that may affect populations, a score of 12.96 is generated.

Line 8d. Population (lines 8a + 8b + 8c)

(0 + 0 + 12.96) for a total population value of 12.96

Line 9. Resources

Again, no conclusive evidence exists that the irrigated pasture indicated in the documentation is, in fact, "commercial agriculture." However, the value assigned is 5.

Line 10. Sensitive Environments

Line 10a. Actual Contamination

As described earlier for line 1, the 1986 observed release does not represent current site conditions; hence, the actual contamination score should be 0, not 25 given by EPA.

Line 10b. Potential Contamination

The wetlands near the site are greater than 1 acre, but less than 50 acres (assigned value is 25). Per EPA's distance distribution, 10 acres are within the 0-1/4 mile distance (25 x 0.25 distance weighting) and 5 acres are within the 1/4 to 1/2 mile distance (25 x 0.054 weighting). Summing the distance weighted values yields a value of 7.60.

Line 10c. Sensitive Environments

Adding lines 10a and b as directed by the HRS Final Rule yields a total score for sensitive environments of 7.60, rather than 25.13 as calculated by EPA.

Line 11. Targets (lines 7 + 8d + 9 + 10c)

(2 + 12.96 + 5 + 7.6) for a total targets score of 27.56.

Air Migration Pathway Score

Line 12. Pathway Score (S_a) [(lines 3 x 6 x 11) / 82,500]

For Tailings Impoundment:

(273 x 10 x 27.56) / 82,500 = 0.91

For Floodplain Sediments:

(330 x 1 x 27.56) / 82,500 = 0.11

Conclusions--Air Migration Pathway

The above are the correct values and scores to be used for the evaluation of the Air Migration Pathway component of the overall HRS Site Score. These corrected values utilize current site information, not the historic information used by EPA. The scores for either site are well below the EPA derived score of 9.62 for this pathway.

WORKSHEET FOR COMPUTING HRS SITE SCORE (FLOODPLAIN SEDIMENTS)

		S	S^2
1.	Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	NE	NE
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	6.39	40.83
2b.	Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	NE	NE
2c.	Surface Water Migration Pathway Score (S_{sw}) (enter larger of lines 2a and 2b as score)	6.39	40.83
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	NE	NE
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	0.11	0.012
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		40.85
6.	**HRS Site Score** Divide the value on line 5 by 4 and take the square root		3.196

WORKSHEET FOR COMPUTING HRS SITE SCORE (TAILINGS IMPOUNDMENT)

		S	S^2
1.	Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	NE	NE
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	8.95	80.11
2b.	Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	NE	NE
2c.	Surface Water Migration Pathway Score (S_{sw}) (enter larger of lines 2a and 2b as score)	8.95	80.11
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	NE	NE
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	0.91	0.828
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		80.93
6.	**HRS Site Score** Divide the value on line 5 by 4 and take the square root		4.498

IV. THE FLOODPLAIN SEDIMENTS SHOULD BE SCORED SEPARATELY FROM THE RICHARDSON FLAT TAILINGS AND SHOULD BE TREATED ON AN EQUAL BASIS WITH THE SILVER CREEK TAILINGS

As discussed in Section II above, the EPA has improperly included the Floodplain Sediments as a part of the Richardson Flat Tailings site. The Floodplain Sediments are an area of contamination migration from upstream sources: the Silver Maple Claims (BLM) and the Silver Creek Tailings (Prospector Square, Park City).

As shown in Section II above and in the PTS Report's Tables 1 and 2 (Exhibit D), the Floodplain Sediments are of a very different composition and origin than the Tailings Impoundment. EPA's 1989 Supplemental Site Investigation Report points out these differences in the composition and the origin of the Floodplain Sediments:

> Analytical results of floodplain tailings indicated notably higher concentrations of cadmium, lead, mercury and zinc as compared to tailings collected from the impoundment and from the south side of the diversion ditch. Surface water and sediment samples from Silver Creek in the vicinity of the floodplain tailings contained high levels of corresponding contaminants.
>
> Background surface water and sediment samples collected from Silver Creek and the Pace Homer Ditch indicated additional sources of inorganic contamination upgradient of sources discussed in this report.

1989 Supplemental Site Investigation Report at 22-23.

In a Memorandum prepared for EPA by an E&E FIT member (Exhibit B), Dr. Werner Raab of MITRE Corporation also acknowledges that upstream areas of Silver Creek (Silver Maple Claims

and Silver Creek Tailings) are the source of downstream contamination migration:

> In a telephone conversation with Werner Raab of MITRE Corporation (7/16/90), Werner indicated to me he is not convinced, based on current data, that contamination detected in RFT-SW-6 and RFT-SW-7 is attributable to Richardson Flat Tailings [Tailings Impoundment]. His contention is based on the potential for upstream contamination in Silver Creek to wash into the marsh during flood events. For this reason, I have not included in the documentation record any measurements provided by the State which are based on the assumption that RFT-SW-6 and RFT-SW-7 are contaminated due to Richardson Flat Tailings.

Exhibit B at 1-2.

In combining the Floodplain Sediments with the Richardson Flat Tailings Impoundment, EPA is ignoring the fact that the Floodplain Sediments are an area of surface water sediments contaminated by migration, not a source, and, therefore, cannot be combined with the Tailings Impoundment in one site. See definitions of "source" and "site," 40 C.F.R. Part 300, App. A § 1.1; definition of "site," SI/HRS Information Bulletin, April 1989, Directive No. 9200.5-302 at 2.

EPA is also acting arbitrarily, capriciously, and in abuse of its discretion by proposing to list the Floodplain Sediments as part of an unrelated site (the Richardson Flat Tailings Impoundment) while ignoring the sources of the contamination in the Floodplain Sediments: the Silver Maple Claims and the Silver Creek Tailings. In proposing to list the area of contamination migration (Floodplain Sediments), while ignoring its sources

(Silver Maple Claims and Silver Creek Tailings), EPA appears to be favoring the upstream governmental entities to the detriment of the downstream landowners.

Both the Silver Maple Claims and the Silver Creek Tailings are upstream sources of tailings which migrate down Silver Creek. EPA's Preliminary Assessment for the Silver Maple Claims states that "tailings are located on the banks of Silver Creek and could be easily moved by Silver Creek" (Part 3: B. Surface Water Contamination, Preliminary Assessment of Silver Maple Claims). Likewise, the BLM's Preliminary Natural Resources Survey for the Silver Maple Claims (Exhibit A at 2) describes the tailings migrating down Silver Creek from the Silver Maple Claims:

> Over time, the excessive material caused the creek to become a braided stream filling in old channels and creating new ones as the stream tried to maintain its equilibrium. The "tailings" are thickest towards the west and thin towards the east. Oxidization has occurred where the minerals have reacted to the surface water and air. A typical orange slime due to the organic interaction of iron oxides with the water exists in stagnant pools. . . . This material contains iron, lead and zinc sulfides.

The BLM's Preliminary Natural Resources Survey for the Silver Maple Claims also finds the source of the tailings on the Claims to be from the Silver Creek tailings pond and prior milling operations at the Silver Creek Tailings site (Prospector Square, Park City).

Under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), an agency of the United States government (BLM) and a municipality (Park City) are to be treated on an equal basis with private entities and are defined as "persons" under CERCLA, along with private entities. 42 U.S.C. § 9601(21). Indeed, CERCLA specifically provides that a federal agency must be treated in the same manner as a nongovernmental entity:

> (1) Each department, agency, and instrumentality of the United States . . . shall be subject to, and comply with, this Act in the same manner and to the same extent, both procedurally and substantively, as any nongovernmental entity.
>
> (2) All guidelines, rules, regulations, and criteria which are applicable to preliminary assessments carried out under the Act for facilities at which hazardous substances are located, applicable to evaluations of such facilities under the National Contingency Plan, applicable to inclusion on the National Priorities List, or applicable to remedial actions at such facilities shall also be applicable to facilities which are owned or operated by a department, agency, or instrumentality of the United States in the same manner and to the extent as such guidelines, rules, regulations, and criteria are applicable to other facilities.

42 U.S.C. § 9620(a)(1) and (2).

Consequently, the Floodplain Sediments should be segregated from the Richardson Flat Tailings site and not scored along with the Tailings Impoundment.

The EPA has long been aware of the effects of the upstream Silver Maple Claims and Silver Creek Tailings upon the

downstream Floodplain Sediments. However, the EPA has chosen to ignore this effect. Because the Silver Creek Tailings (Prospector Square, Park City) is the upstream originating source of the tailings in Silver Creek, the Floodplain Sediments should be separated from the Richardson Flat site and treated on an equal basis with their originating source, the Silver Creek Tailings (Prospector Square, Park City). In this manner, EPA would apply its scoring system fairly and equally to similar sites. EPA's actions to the contrary are arbitrary, capricious, an abuse of discretion, without basis in law, and contrary to the protections provided in CERCLA.

V. EPA'S PROPOSAL TO LIST THE RICHARDSON FLAT SITE IS SUBJECT TO THE PRESIDENT'S 90-DAY MORATORIUM

On January 28, 1992, the President of the United States, in his State of the Union Address, instituted a "90-day moratorium on any new federal regulations that could hinder growth." EPA's proposed rule to list the Richardson Flat site on the NPL, published February 7, 1992 in the Federal Register, is precisely such a federal regulation.

Just to address the multiple issues raised in the EPA's proposal to list a site, a small company must spend substantial amounts of money. EPA's listing proposal has a chilling effect not only upon the economic growth of the company owning the site, but also upon the community in which the site is located.

Because of the substantial impact this proposed rule has upon both small businesses and the surrounding community, it

should be subject to the 90-day moratorium. Regardless of the date upon which this proposed rule was signed, it was not filed with the Federal Register until February 6, 1992 and was not published in the Federal Register until February 7, 1992. Thus, the EPA is under an obligation to delay the promulgation of the proposed rule, pursuant to the President's January 28, 1992 order.

EPA acted without authority in publishing the proposed rule in contradiction to the President's order. Consequently, the proposed rule should be rescinded by EPA, and EPA's basis for its proposed listing of the Richardson Flat site should be reconsidered by EPA in light of United Park's Comments as stated herein.

VI. CONCLUSION

EPA's HRS score for the Richardson Flat Tailings site was prepared on the basis of significant factual errors and incorrect assumptions. Likewise, EPA's scoring was arbitrary, capricious, and an abuse of its discretion, in that EPA relied upon unsubstantiated conjecture which directly contradicted EPA's own quantified, analytical data from the site. When such errors are made in scoring a site, the site should be rescored before such errors cause the site to be erroneously added to the NPL. See 132 Cong. Rec. S14935-36 (daily ed. Oct. 3, 1986) (statements of Senators Chiles and Stafford).

In addition, in order to accurately and fairly assess the Richardson Flat Tailings Impoundment site, the Floodplain Sediments must be segregated and scored separately. The

Floodplain Sediments must also be treated by EPA equally with the source of the Floodplain Tailings, which is the Silver Creek Tailings site (Prospector Square), Park City, Utah.

When PTS rescored the Richardson Flat Tailings Impoundment site and the Floodplain Sediments site separately, using correct factual information and assumptions pursuant to the revised HRS Final Rule, the final score for each site is significantly lower than 28.5. Consequently, neither site should be listed on the NPL.

Finally, EPA's proposal to list the Richardson Flat site on the NPL is subject to the President's 90-day moratorium and must be rescinded because of that moratorium.

DATED this 6th day of April, 1992.

Respectfully submitted,

Rosemary J. Beless
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a Professional Corporation
Twelfth Floor
215 South State Street
P.O. Box 510210
Salt Lake City, Utah 84151
(801) 531-8900

Attorneys for United Park City Mines Company

CERTIFICATE OF SERVICE

I hereby certify that I caused the original and three copies of the foregoing Comments of United Park City Mines Company in Opposition to Proposed Rule, in the Matter of the Proposed Listing of Richardson Flat Tailings, Summit County, Utah, on the National Priorities List, to be delivered, via Federal Express, this 6th day of April, 1992, to the following:

Larry Reed, Director
Hazardous Site Evaluation Division
(Attn: NPL Staff)
Office of Emergency and Remedial
Response (OS-230)
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Rosemary J. Beless

RJB:033092a

ecology and environment

1776 SOUTH JACKSON STREET, DENVER, COLORADO 80210, TEL. 303-757-4984

International Specialists in the Environment

This document has been revised and sent to HQ

TO: Gregory Oberley, NPL Coordinator
FROM: Susan Kennedy, E & E FIT
DATE: 20 July 1990
SUBJECT: Transmittal of HRS Package Elements for Richardson Flat Tailings, Summit County, Utah, TDD F08-8903-06, PAN FUT0039HDA.
CC: Gerry Snyder, FIT-RPO

Attached are the following draft HRS package elements for Richardson Flat Tailings:

Revised HRS score sheet for the surface water route;
Revised HRS overall score sheet; and
Revised Documentation Record.

Revisions are based on information provided in the State of Utah's memorandum to file (dated 7/6/90) and on information provided by the FIT in the Supplemental Site Inspection Report (dated 12/20/89; TDD F08-8903-06). Revisions were made to the most recent version of the Richardson Flat Tailings HRS package in FIT's possession, submitted to EPA Region VIII on 9/3/87 under TDD F08-8703-01.

In a telephone conversation with Werner Raab of MITRE Corporation (7/16/90), Werner indicated to me he is not convinced, based on current data, that contamination detected in RFT-SW-6 and RFT-SW-7 is attributable to Richardson Flat Tailings. His contention is based on the potential for upstream contamination in Silver Creek to wash into the marsh during flood events. For this reason I have not included in the documentation record any measurements provided by the State which

are based on the assumption that RFT-SW-6 and RFT-SW-7 are contaminated due to Richardson Flat Tailings.

As you will note from the documentation record, several approaches can be used in assigning values for facility slope/intervening terrain, distance to nearest surface water and distance to intakes. As Werner Raab is understandably reluctant to specify which approach to use, I have cited applicable supporting documentation for various scoring approaches, and have numbered them. The attached surface water pathway score is based on the the most conservative approach. In order to finalize the attached material, one approach must be decided upon and irrelevant language should be removed from the documentation record.

Other elements of the HRS package which remain incomplete are the reference list (HRS Documentation Log Sheet) and the attached supporting documents. In reviewing the 1987 package, I noted a problem with References 3 and 5. Reference 3 is an outdated radius of influence map which should be redrafted by FIT prior to package finalization. The updated map should illustrate all appropriate distance measurements once one approach has been decided upon. Secondly, Reference 5 should be omitted from the package for two reasons. The PRP objected to its use during the original public comment period, and it was included only as supporting documentation. Other documentation for the waste quantity calculation is contained in the package.

Three additional references (17, 18 and 19) were added to the reference list. I have attached Reference 19 and can also provide a complete copy of Reference 17 if you wish. Reference 18 should be the State's complete and final report on recent field events including figures, photos, etc.

Please contact me if I can be of further assistance.

STATE OF UTAH-L. ARTMENT OF SOCIAL SERVICES

EXHIBIT C

Salt Lake Tribune, Inc.

DIVISION OF HEALTH
44 MEDICAL DRIVE
SALT LAKE CITY, UTAH 84113
AREA CODE 801
328-6146

LYMAN J. OLSEN, M.D., M.P.H.
Director of Health

May 29, 1974

Nursing Home Advisory Council
Water Pollution Committee

BUREAU OF ENVIRONMENTAL HEALTH
72 East 4th South
Salt Lake City, Utah

Frank W. Millsaps
Concentrator Supt.
Park City Ventures
Star Route No. 1 Box 40
Heber City, Utah 84032

Dear Mr. Millsaps:

We have completed review of the Dames & Moore Report 8998-003-06 on the Park City Ventures Corporation Proposed Tailings Pond Development, and your letters of April 23, 1974, and May 13, 1974.

As a result, the plans for this tailings pond are approved and a construction permit, as constituted by this letter is hereby issued subject to the following conditions:

1. Monitoring results of Silver Creek, the Diversion ditch and the Monitoring wells should be submitted to this office.

2. At least two feet of freeboard shall be maintained during periods of tailings disposal.

This proposal is for an embankment, dikes and a diversion ditch to totally contain the mill tailings. The embankment is to be built to a height of approximately 40 feet on the northwest corner of the existing tailings disposal area. It is to be constructed with a cutoff trench to bedrock, a zone of silty or sandy clay, and a zone of silty sands and gravels having a slope of 2 horizontal to 1 vertical. In addition approximately 5,300 feet of dikes will be built to contain the tailings. This proposal also specifies a runoff diversion ditch at least 50 feet outside of the dikes.

Since this proposal is for an embankment greater than ten feet high and covers an area greater than 20 acres, you should also clear your plans with the State Division of Water Rights before commencing construction. The single set of plans received has been placed in our files.

Very truly yours,

UTAH WATER POLLUTION COMMITTEE

Calvin K. Sudweeks,
Executive Secretary

SMcN:sb
cc: EPA Denver - Evan Dildine
EPA Salt Lake - Cecil Carroll
State Division of Water Rights
Morgan - Summit County Health Dept.

HRS EVALUATION FOR THE RICHARDSON FLAT TAILINGS SITE PARK CITY, UTAH

PREPARED FOR:
UNITED PARK CITY MINES COMPANY
309 KEARNS BUILDING
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101

APRIL 3, 1992

PIONEER
TECHNICAL SERVICES, INC.
P.O. BOX 3445, BUTTE, MONTANA 59702 PHONE (406) 494-4024 FAX (406) 494-2521

HRS EVALUATION FOR THE RICHARDSON FLAT TAILINGS SITE PARK CITY, UTAH

PREPARED FOR:

UNITED PARK CITY MINES COMPANY
309 KEARNS BUILDING
136 SOUTH MAIN STREET
SALT LAKE CITY, UTAH 84101

PREPARED BY:

P T S, INC.
P. O. BOX 3445
BUTTE, MONTANA 59702

APRIL 3, 1992

I. INTRODUCTION

Throughout the EPA HRS scoring of the Richardson Flat tailings site, two separate and distinct sites are discussed interchangeably: Site #1 - the impounded tailings in Sections 1 and 2 of Township 2 South, Range 4 East, and located on the eastern side of Silver Creek and the U. P. Railroad tracks in their entirety; and, Site #2 - the floodplain sediment materials in Section 2, located west of Silver Creek and the Railroad. The HRS scoring is performed using one site, then the other, and occasionally both are included, depending on which yields the highest score. The HRS Final Rule addresses the scoring and aggregating of multiple sites; however, these two sites, which have been combined for EPA's convenience here, do not constitute a single site by any definition, including the HRS's. The two sites do not contain the same HRS source types (tailings pile vs. contaminated sediments), nor do they have similar waste containment (run-on and run-off controls vs. no containment). Throughout the following HRS evaluation, these two sites have been scored separately, indicating their status as separate potential sources of contaminants to Silver Creek. The specific reasons that they are segregated is that they each represent distinct and significantly different origins, compositions, locations, and containment situations.

The floodplain sediments are composed of upstream tailings mixed with the natural fluvial sediments in Silver Creek. They originated upstream of the Richardson Flat tailings site, most likely from the Silver Creek Tailings site at Prospector Square, Park City, UT. The EPA FIT Supplemental Site Inspection Report (Reference 4, Section 7.3, page 23) concludes:

> "Background surface water and sediment samples collected from Silver Creek and the Pace Homer Ditch indicated additional sources of inorganic contamination upgradient of sources discussed in this report."

These contaminated floodplain sediments should not even be considered a "source" as defined by the HRS Final Rule, since the Rule specifically excludes them (40 CFR Part 300; Appendix A - The Hazard Ranking System; Section 1.1 Definitions - Sources):

> "Sources do not include those volumes of...surface water sediments that have become contaminated by migration, except; in the case of...contaminated surface water sediments with no identified source, [they] may be considered a source."

The data collected by EPA (References 12 & 4), the USGS (1987) and UPCM (MSE, 1988) clearly show that these contaminated sediments <u>have</u> an identified source, the Silver Creek Tailings site at Prospector Square, only 1.6 miles upstream. The tailings

impounded at Richardson Flat originated from a specific mine and the impoundment was constructed and was permitted by the Utah Department of Health.

The composition of the materials collected from the two sites exemplifies their very different origin. The first site is clearly a tailings pond (source type: tailings pile, according to the HRS Final Rule), while the second site is a mixture of natural sediments and tailings originating upstream, a contaminated soil source type. Table 1 compares averaged concentrations of 1989 FIT samples (Reference 4) collected from the two sites, illustrating these compositional differences.

TABLE 1

COMPARISON OF SITE ANALYTICAL DATA
FROM 1989 EPA FIT SAMPLING

ANALYSIS IN MG/KG	RICHARDSON FLAT RFT-TA-1, 2, & 3	FLOODPLAIN SEDIMENT RFT-TA-4 & 5
ANTIMONY	78.2	132
CADMIUM	52.7	183.5
CALCIUM	53,233	19,100
CHROMIUM	5.6	< 0.65
IRON	44,867	92,200
LEAD	3,387	20,450
MAGNESIUM	17,567	641
MANGANESE	1,833	232
MERCURY	1.06	7.9
SELENIUM	18.5	42.1
SILVER	17.7	88.9
ZINC	7,677	25,000
SOIL pH (S.U.)	6.24	2.0

From the 1989 EPA FIT sampling data, a significant difference between the two sites is apparent, with the floodplain sediments having much higher concentrations of Sb, Cd, Fe, Pb, Hg, Se, Ag and Zn, while the Richardson Flat samples have higher concentrations of Ca, Cr, Mg, Mn, and pH. These data illustrate

both the different origin of the two materials and the different HRS source type applicable to each site.

Examination of the site maps (Reference 4, second Figure 2) clearly illustrates the separate and unrelated locations of the two sites. The Richardson Flat tailings are located more than 500 feet east of Silver Creek, and east of two railroad grades; while the floodplain sediments are located west of Silver Creek, between the access road and the westernmost railroad grade. The distance seperating the two sites is more than 600 feet and the sites are separated by significant topographic features (the tailings dam, Silver Creek, and two railroad grades).

The containment situation at the two sites is also significantly different. The tailings pond has engineered run-on and run-off controls constructed to divert or contain surface water, while the floodplain sediments have no containment structures.

In order to accurately evaluate the risks to human health and the environment posed by each of the two sites, they must be considered as separate entities and cannot be treated as a single site.

The following analysis utilizes the HRS Final Rule as defined in 40 CFR Part 300; Appendix A - The Hazard Ranking System (Federal Register / Vol. 55, No. 241 / Friday December 14, 1990) for instructions and guidance. Any references to Tables or Figures used for scoring are included within the HRS Final Rule, and references cited by number (eg. Reference 4) are the reference numbers associated with the HRS Documentation Record provided with the scoring package (EPA, 1992). A line by line analysis of the HRS DOCUMENTATION RECORD scoresheets (Tables 4-1 and 6-1, EPA, 1992) presented by EPA for the scoring of the Richardson Flat Tailings site follows.

II. SURFACE WATER MIGRATION PATHWAY SCORESHEET (TABLE 4-1)

Drinking Water Threat

Likelihood of Release

Line 1. Observed Release

Score assigned is 550; rationale is an alleged "direct observation" of alleged tailings material located near the tailings impoundment "sloughing" into the diversion ditch and from the floodplain sediments "slumping" into Silver Creek. Upon examination of the evidence alleged to support this "direct observation" and other data pertinent to this site, several serious problems arise, causing the correct observed release value to be zero, and the potential to release to be evaluated instead.

First, and most important, the analytical data gathered by the FIT for EPA at the site in 1989 (Supplemental Site Inspection Report, Reference 4) shows that an observed release cannot be documented with the chemical data. The report concludes in section 7.2 (page 21):

> "Analytical results of surface water and sediment samples collected from Silver Creek and the diversion ditch do not support an observed release of contaminants to surface water."

Examination of these analytical data provides the same conclusion; namely, that EPA has explicitly demonstrated that there is not a release of hazardous materials to surface water that is attributable to the Richardson Flat Tailings site. This is exhibited in both the surface water samples and the stream sediment samples (data in Reference 4) collected by EPA FIT. Both sets of samples have elevated metals concentrations in upstream, on-site and downstream samples, both in the diversion ditch and in Silver Creek. These data clearly do not demonstrate an "observed release" meeting the requirements set forth in Table 2-3 of the HRS Final Rule (downstream concentration three times higher than upstream concentration). In fact, EPA FIT clearly states in Reference 4, Section 7.5, page 23, that:

> "In summary, no observed release of contaminants attributable to the site has been clearly documented. Inorganic contamination is prevelent throughout the study area and additional sources of contamination other than those discussed in this report may exist."

Data that UPCM has previously collected (Table 2) clearly show that concentrations increase in an upstream direction,

which is consistent with an upstream origin for the elevated metals found in Silver Creek sediment samples. These data demonstrate a decay of metal concentrations with distance away from the Prospector Square tailings (sample PC-6 to sample PC-1), indicating that they are the origin of the metals found in Silver Creek, both in the past (contaminated floodplain sediments) and currently (EPA and USGS data).

TABLE 2

SILVER CREEK ANALYTICAL DATA
FROM 1988 UPCM SEDIMENT SAMPLING STATIONS

STATION #	ARSENIC	LEAD	COPPER	MERCURY
PC-6 UPSTREAM	200	5,320	260	3.88
PC-5 UPSTREAM	220	4,750	200	2.37
PC-3	190	6,650	200	2.77
PC-2 KEETLEY JCT	200	3,660	340	1.69
PC-1 DOWNSTREAM	140	2,970	170	1.53

Given all the information to the contrary, how can EPA allege an observed release by "direct observation" when their own chemical data clearly demonstrate otherwise? This attempt to ignore significant pertinent data about the Richardson Flat site is not consistent with the intent of the CERCLA/SARA statutes.

Secondly, the source characterization samples collected for analysis were not taken from the alleged "slumping" material, but were collected from a location 400 feet southeast of the point of the alleged "observed release" to the diversion ditch; and, between 50 and 100 feet from Silver Creek in the floodplain sediments, which are not even in contact with Silver Creek according to the figure in the Supplemental SI report (Reference 4, the second Figure 2). Obviously, there are tailings at the Richardson Flat site, the issue is whether tailings are being released to surface water. The collection of the allegedly observed "slumping" material is necessary in order to prove that this material is actually tailings and does actually contain the high

concentrations of metals found in tailings elsewhere on the site. Visual similarity does not constitute documentation that they are the same material.

Thirdly, the materials alleged to be "slumping" into the diversion ditch were assumed to be tailings (light grey in color, tailings [medium to fine-grained] texture, according to Reference 4); but, are primarily alluvial materials. The alluvium is derived from local tan to grey volcanic rocks and has grayish tan color, not the red-orange to brown color of the weathered tailings material. The diversion ditch was constructed in the underlying materials, per the direction and approval of the Utah Department of Health. The physical appearance of the tailings material and the alluvial material is similar (tan to grey sands and silts), so it is easily misidentified. Since no samples were collected of the alleged "slumping" materials, identifying it as tailings is purely conjectural.

Fourth, the materials in the Silver Creek floodplain were not "dumped" there, as stated in the documentation package (EPA, 1992, pg. 11). Instead, they were transported and deposited in the floodplain all along the Silver Creek watercourse by the natural fluvial system. They originated from the Prospector Square (the Silver Creek Tailings site) tailings as shown by USGS (1987) and UPCM sampling results (Table 2, above). A comparison of metals concentrations found in the floodplain sediments (RFT-TA-4 & 5) with the sediment samples collected in Silver Creek (RFT-SE-2 & 3) shows that average concentrations of Sb, As, and Fe in the Silver Creek sediments are significantly higher than those in the alleged source, also indicating an upstream source for these contaminants (Reference 4 contains all these data). Also, examination of the metals and pH data from the floodplain sediments indicates they are substantially different from those at the Richardson Flat site (see Table 1, above). In any event, the facts show that the floodplain sediments originated elsewhere, not from the Richardson Flat Tailings site.

Last, the basis for the "direct observation" (on-site and vertical aerial photographs, a letter from the Utah Department of Health, and a personal communication) do not document any "sloughing or slumping" of tailings into either the diversion ditch or Silver Creek. It is physically impossible to observe releases on an aerial photograph (References 7 and 8), especially at the scale of these air photos and the nature of the contaminant medium (do tailings entrained by the stream look different on aerial photos than natural sediments?). The on-site photos (References 4 and 20) also do not show any tailings being released to surface water. It is not clarified anywhere whether the observer

actually saw tailings actively "slumping" into the ditch or creek, or whether it was presumed to occur due to the proximity of the tailings (Reference 19 states only that to the best of the FIT member's recollection 2 years later "...the tailings [material] extended all the way to the surface water body..."; Reference 25 states only that "The sloughing of tailings into the diversion ditch was observed..."). Neither one of these alleged observations is supported by any photographic or analytical data that verifies that the "slumping" material is actually tailings. Additionally, UPCM personnel and their consultant were present during the FIT sampling and did not observe this alleged "sloughing of tailings" into the ditch or Silver Creek. These alleged observations cannot be used as the primary basis to score an observed release to surface water.

Clearly then, the observed release score should be zero (0) and the potential to release scenario evaluated instead.

Line 2. Potential to Release by Overland Flow

No overland flow route is available for the impounded tailings due to the containment structures built on the site. The tailings impoundment has a maintained cover, run-on controls (diversion ditches) and run-off controls (berms) in place to insure that any rainfall that falls on the tailings will not run-off and that none will run-on to the tailings (Dames and Moore, 1974). The HRS Final Rule states that for this containment situation, the potential to release value should be assigned 0. However, the floodplain sediments are evaluated for potential to release by overland flow.

Line 2a. Containment

The floodplain sediments have no containment structures in place; hence, the assigned value is 10.

Line 2b. Runoff

The 2-year, 24-hour rainfall for the area is 1.40 inches (NOAA). The drainage area for the floodplain sediments is estimated (EPA, 1992) at approximately 269,500 square feet or 6.2 acres, which yields an assigned value of 1 from Table 4-3. The soil group is a silty-sand, assigned a soil group designation of B (medium textured, Table 4-4). Using tables 4-5 and 4-6 yields a runoff factor value of zero (0).

Line 2c. Distance to Surface Water

The floodplain sediments, using an overland flow route, are within 100 feet of surface water, which yields an assigned value of 25 (Table 4-7).

Line 2d. Potential to Release by Overland Flow [lines 2a x (2b + 2c)]

For the impounded tailings: [0 x (0 + 25)] = 0.
For the floodplain sediments: [10 x (0 + 25)] = 250.

Line 3. Potential to Release by Flood

Line 3a. Containment (flood)

The impounded tailings are within the 500-year floodplain of Silver Creek (FEMA, 1986) and the diversion ditch and containment structures are designed to withstand a 100-year event (Dames and Moore, 1974). The floodplain sediments are within the 10-year floodplain (FEMA, 1986) and have no containment structures. Both can be assigned values of 10 for containment; the impounded tailings for the 500-year event, and the floodplain sediments for the 10-year event.

Line 3b. Flood Frequency

The impounded tailings are in the 500-year floodplain, assigned value is 7. The floodplain sediments are in the 10-year floodplain, assigned value is 50.

Line 3c. Potential to Release by Flood (lines 3a x 3b)

For the impounded tailings: (10 x 7) = 70;
For the floodplain sediments: (10 x 50) = 500.

Line 4. Potential to Release (lines 2d + 3c), maximum of 500.

For the impounded tailings: (0 + 70) = 70;
For the floodplain sediments: (250 + 500) = 750 (Max. = 500)

Line 5. Likelihood of Release (higher of lines 1 or 4)

For the impounded tailings, the higher score is 70;
For the floodplain sediments, the higher score is 500.

<u>Waste Characteristics</u>

Line 6. Toxicity/Persistence

The technically correct evaluation for toxicity should utilize data for the form(s) of the materials as they exist

on the site. The form of the metals is important with respect to toxicity (see Davis et al., 1992), since the metals in tailings are primarily sulfide compounds, not in their elemental forms as assumed by the HRS scoring. Sax, 6th Ed. (p. 2482) states "sulfides of the heavy metals are generally insoluble and, hence, have little toxic action except through the generation of hydrogen sulfide." However, the HRS does not consider the form of metal in its toxicity evaluation, instead it relies on a table of values for the elemental forms (Reference 2). For lead and arsenic, toxicity is assigned as 10,000 and persistence as 1 for toxicity/persistence factor value of 10,000 (Table 4-12).

Line 7. Hazardous Waste Quantity

For the impounded tailings: Using the Tier D formula, the quantity was calculated (EPA, 1992) as 6,535,375 sq. ft. (from aerial photos)/ 13 = 502,721, which yields a factor value of 10,000.

For the floodplain sediments: Again using the Tier D formula, the quantity was calculated (EPA, 1992) as 269,500 sq. ft. (from aerial photos). The floodplain materials were scored by EPA as "piles" (Table 2-5), which they most certainly are not. Since the floodplain sediments are a mixture of natural fluvial sediments and tailing materials from upstream sources, the more applicable waste type for use in Table 2-5 is "contaminated soil". Using the estimated area of 269,500 sq. ft. and dividing by the contaminated soil measure of 34,000 yields 7.9265. This translates (Table 2-6) to a hazardous waste quantity factor value of 1.

Line 8. Waste Characteristics

The factor value is determined by multiplying lines 6 and 7, then assigning a value from Table 2-7. For the impounded tailings: 10,000 x 10,000 = 1 x 10^8; assigned factor value is 100. For the floodplain sediments: 10,000 x 1 = 10,000; assigned factor value = 10.

<u>Targets</u>

Line 9. Nearest Intake

The correct score is 0, per EPA.

Line 10. Population

The correct score is 0, per EPA, for lines 10 a,b,c and d.

Line 11. Resources

Irrigation of commercial forage crops are alleged by the documentation record. Although it has been made clear that water is diverted from Silver Creek for irrigation purposes, the documentation provided does not indicate that this water is used for production of commercial forage, as is necessary to score it as a resource. The record of communication (Reference 33) merely states that "Mrs. Pace uses hay grown on their land as feed for their dairy cattle". It does not clarify whether the pasture irrigated by Silver Creek produces the hay that is then consumed by these cattle, nor does it contend that these are commercial dairy cattle. Contrary to the conclusion in Reference 33, this does not verify commercial use of land irrigated by Silver Creek. Nevertheless, a resources factor value of 5 is assigned, as per EPA.

Line 12. Targets (lines 9 + 10d + 11)

(0 + 0 + 5) for a total Targets value of 5.

Drinking Water Threat Score

Line 13. Drinking Water Threat Score ([lines 5 x 8 x 12]/82,500, subject to a maximum of 100)

For the impounded tailings: [(70 x 100 x 5)/82,500] = **0.42**
For the floodplain sediments: [(500 x 10 x 5)/82,500] = **0.30**

Human Food Chain Threat

Likelihood of Release

Line 14. Likelihood of Release (same value as line 5)

See discussion in line 1 regarding "observed release", and calculations in lines 2 through 5 on potential to release. Scores are the same as calculated for line 5: for the impounded tailings, the score is 70; for the floodplain sediments, the score is 500.

Waste Characteristics

Line 15. Toxicity/Persistence/Bioaccumulation

It is inconsistent to now use mercury as the contaminant of concern, just because it has a high bioaccumulation factor, rather than use arsenic or lead which occur at much higher concentrations. However, this is in accordance with the HRS Final Rule, using the highest scoring compound to figure this factor. Per HRS Reference 2, mercury has a toxicity

factor of 10,000 and a persistence factor of 1, resulting in a toxicity/persistence value of 10,000; mercury has a bioaccumulation value of 50,000. From Table 4-16, the resultant value for this line is 5×10^8.

Line 16. Hazardous Waste Quantity

The HRS Final Rule instructions assign the same values here as in Line 7 above: for the impounded tailings, the score is 10,000; for the floodplain sediments, the score is 1.

Line 17. Waste Characteristics

Calculating the factor category value per the instructions: ([toxicity/persistence value x line 16, maximum of 1×10^8] x the bioaccumulation value, with a maximum of 1×10^{12}) yields the following:

For the impounded tailings: $10,000 \times 10,000 \times 50,000 = 5 \times 10^{12}$, since the maximum is 1×10^{12}, the assigned value from Table 2-7 is 1,000.

For the floodplain sediments: $10,000 \times 1 \times 50,000 = 5 \times 10^8$, the assigned value from Table 2-7 is 100.

Targets

Line 18. Food Chain Individual

Since the criteria for an observed release to surface water have not been met (see discussion for line 1), no Level II contamination has been documented and the score assigned by EPA (45) is invalid. The documentation provided includes no data supporting the existence of a fishery in Silver Creek. In fact, in Reference 31, the Utah Division of Wildlife Resources information states that "electroshocking data collected on Silver Creek in 1970 did not show the presence of game fish". The conversations with biologists cited later in the reference are not quantified data and therefore do not establish the existence of a fishery in Silver Creek. Additionally, a 1986 study by the Utah Division of Wildlife Resources found no game fish anywhere in Silver Creek (Bangerter and Ray, records of communication with Utah Division of Wildlife Resources).

Due to the lack of either a documented observed release or an established fishery, the correct assigned value for the food chain individual threat is zero (0).

Line 19a. Level I Concentrations

The correct score is 0, per EPA.

Line 19b. Level II Concentrations

The correct score is also 0, per EPA.

Line 19c. Potential Human Food Chain Contamination

Since a fishery has not been established in Silver Creek (see above discussion for line 18), annual production of game fish is assigned as zero (0), and the resultant human food chain population value for Silver Creek (Table 4-18) should also be 0, not 0.03 as scored by EPA. However, a fishery has been established in the Weber River within the 15-mile limit, and the population value of 0.3 and a dilution weighting of 0.01 are correctly assigned. Summation of the values equals 0.003 and division by 10, as directed by the HRS Final Rule, yields a population factor of 0.0003; not 0.0033, as calculated by EPA.

Line 19d. Population (lines 19a + 19b + 19c)

(0 + 0 + 0.0003) for a total population value of 0.0003.

Line 20. Targets (lines 18 + 19d)

(0 + 0.0003) for a total targets value of 0.0003.

Human Food Chain Threat Score

Line 21. Human Food Chain Threat Score [(lines 14 x 17 x 20)/ 82,500, subject to a maximum score of 100)

For the impounded tailings:
(70 x 1000 x 0.0003) / 82,500 = **0.00025**;

For the floodplain sediments:
(500 x 100 x 0.0003) / 82,500 = **0.00018**.

Environmental Threat

Likelihood of Release

Line 22. Likelihood of Release (same value as line 5)

See discussion in line 1 regarding "observed release", and calculations in lines 2 through 5 on potential to release. Scores are the same as calculated for line 5: for the impounded tailings, the score is 70; for the floodplain sediments, the score is 500.

Waste Characteristics

Line 23. Ecosystem Toxicity/Persistence/Bioaccumulation

Again it is inconsistent to use mercury as the contaminant of concern now, just because it has the highest factor value; however, this is in accordance with the HRS Final Rule, using the highest scoring compound to figure this factor. For mercury: Ecosystem Toxicity/Persistence is 10,000; Ecosystem Bioaccumulation Potential is 50,000; yielding an Ecosystem Toxicity/Persistence/Bioaccumulation Factor of 5.0×10^8.

Line 24. Hazardous Waste Quantity

The HRS Final Rule assigns the same value here as in Line 7 above: for the impounded tailings, the score is 10,000; for the floodplain sediments, the score is 1.

Line 25. Waste Characteristics

Calculating the factor category value per the instructions: ([ecosystem toxicity/persistence value x line 24, maximum of 1×10^8] x the ecosystem bioaccumulation value, with a maximum of 1×10^{12}) yields the following.

For the impounded tailings: $10,000 \times 10,000 \times 50,000 = 5 \times 10^{12}$, since the maximum is 1×10^{12}, the assigned value from Table 2-7 is 1,000.

For the floodplain sediments: $10,000 \times 1 \times 50,000 = 5 \times 10^8$, and the assigned value from Table 2-7 is 100.

Line 26. Sensitive Environments

The only sensitive environments are wetlands.

Line 26a. Level I Concentrations

The correct score is 0, per EPA.

Line 26b. Level II Concentrations

This line was assigned a value of 50 by EPA based again on the alleged "observed release" of contaminants to surface water. As described previously in Line 1, EPA's own sampling data show no observed release and none has been otherwise documented; hence, the correct value for this line is 0.

Line 26c. Potential Contamination

Using the HRS Final Rule definitions regarding the estimation of the total length of potentially impacted wetlands and the wetlands inventory maps provided in the documentation package (References 16 and 16a), shows that the wetland frontage calculated by EPA for the Richardson Flat tailings site is grossly overestimated. The instructions in the HRS to account for wetland frontage on both sides of a wetland area that is bisected by a stream were apparently misinterpreted by the EPA contractor to mean the entire length of the stream, which takes the HRS guidelines to an absurd extreme and causes the maximum score of 500 to be assigned. The HRS Final Rule clearly states (in Section 4.1.4.3.1.1) that:

> "For rivers [and streams], use the length of the wetlands contiguous to the in-water segment of the hazardous substance migration path (that is, the wetland frontage)."

It does not state or imply that the in-water portion of the stream is to be considered as a wetland. The wetlands inventory maps for Silver Creek downstream from the Richardson Flat Tailings site are primarily one-dimensional wetlands coincident with the in-stream portion of the creek bottom (designated as PEMC), not "wetlands contiguous to the in-water segment" of the stream that would satisfy the guidance given in the HRS Final Rule.

Using the same wetlands inventory maps and correctly measuring only two-dimensional wetlands contiguous to the stream and only accounting for additional wetland frontage when a wetland area is indeed bisected by the stream, yields only 3.41 miles of wetlands bordering Silver Creek between the 2 sites and the Weber River (which includes the diversion ditch and Silver Creek one-half mile upstream from the confluence of the ditch). The Weber River segment borders a total of 1.7 miles of wetlands, counting both sides of the river. The appropriate values from Table 4-24 are as follows.

For the diversion ditch and Silver Creek segment: 3.41 miles of wetland frontage is assigned a value of 100, and when multiplied by the dilution weighting for Silver Creek (1.0), yields a weighted value of 100.

For the Weber River segment: 1.70 miles of wetland frontage is assigned a value of 50, and when multiplied by the dilution weighting for the Weber River (0.01), yields a weighted value of 0.5.

When these weighted values are summed and divided by 10 as directed, they yield a sensitive environments score of 10.05, not the score of 50.05 calculated by EPA.

Line 26d. Sensitive Environments (lines 26a + 26b + 26c)

(0 + 0 + 10.05) for a total score of 10.05.

Line 27. Targets (value from line 26d)

The correct value for total targets is 10.05.

Environmental Threat Score

Line 28. Environmental Threat Score [(lines 22 x 25 x 27) / 82,500, subject to a maximum score of 60]

For the impounded tailings site:
(70 x 1000 x 10.05) / 82,500 = **8.53**;

For the floodplain sediments:
(500 x 100 x 10.05) / 82,500 = **6.09**.

Surface Water Overland/Flood Migration Component Score - Watershed

Line 29. Watershed Score (lines 13 + 21 + 28, subject to a maximum of 100)

For the impounded tailings:
(0.42 + 0.00025 + 8.53) = **8.95025**

For the floodplain sediments:
(0.30 + 0.00018 + 6.09) = **6.39018**.

Surface Water Overland/Flood Migration Component Score

Line 30. Component Score (S_{of}) (highest score from line 29 for all watersheds evaluated)

Since only one watershed was evaluated, the component scores for each site are as follows:

For the impounded tailings, the score is **8.95025**;

For the floodplain sediments, the score is **6.39018**.

Conclusions - Surface Water Route

The above are the correct values and scores to be used for the evaluation of the Surface Water Overland/Flood Migration Component of the overall HRS Site Score. These corrected values utilize complete, documented, and current site information, not the old, incorrect, incomplete and undocumented information presented by EPA. The scores for either site are well below the EPA derived score of 100 for this pathway.

III. AIR MIGRATION PATHWAY SCORESHEET (TABLE 6-1)

Likelihood of Release

Line 1. Observed Release

Since the 1986 high volume particulate samples were collected, site conditions have been significantly altered. The surface of the Richardson Flat tailings has been almost entirely covered with topsoil material and has been completely fenced in order to prevent both windblown tailings and direct contact by trespassers. EPA has indicated that HRS scoring using current conditions is consistent with the intent of CERCLA because it encourages rapid remedial action. At the Richardson Flat Tailings site, the potential for exposure to the tailings materials, both via the air pathway and the soil exposure pathway, has been significantly reduced by the capping of the tailings with clean topsoil and the fencing. Therefore, scoring the site based on historic conditions (1986 data, References 11 and 11a) is inappropriate and not consistent with the intent of the new HRS.

Additionally, there are several concerns with the air sampling done by EPA's contractor in 1986. The only data used from the 5-day air sampling during July, 1986 was a twelve-hour period when local windstorms were strong enough to entrain some of the then uncovered tailings. This short sampling interval is not representative of either the direction or the magnitude of winds at the site, especially considering the remainder of the air sampling data collected during that week. Additionally, the insufficient number of samples and brief sampling duration do not adequately substantiate any risk to human health or the environment. EPA's contractor states that the air sampler that detected the "release" was placed 20 feet from the tailings on the tailings embankment, for the purpose of qualifying it as an "off-site" air sample, which it certainly is not.

The HRS Documentation package claims that the National Ambient Air Quality Standard (NAAQS) for lead (1.5 $\mu g/M^3$) was exceeded during a particular 12-hour period (one sample at one station had 1.65 $\mu g/M^3$ lead). The NAAQS is a quarterly (3-month) average not a 12-hour standard, no such short-term standard exists. If the measurements for the downwind station (AM-04) are averaged over the 5-day sampling period in July, the resulting concentration is 0.38 $\mu g/M^3$, roughly 25% of the quarterly standard. Calculated a different way, using the concentrations at various downwind stations (varied daily), yields an average concentration of 0.53 $\mu g/M^3$, still only 35% of the qarterly standard. In

short, there is no evidence that NAAQS for lead were exceeded, even on-site prior to the capping effort (there are no ambient air standards for Cd, As or Zn). Potential off-site receptors at more distant locations (eg. Park City) and after capping can hardly be considered to have even the slightest increase in risk attributable to the Richardson Flat Tailings site.

The observed release to the air pathway should be scored 0 and the potential to release evaluated instead, using <u>current</u> site conditions.

Line 2. Potential to Release

Line 2a. Gas Potential to Release

Assigned a 0 since no materials meeting the vapor pressure criteria are on the site.

Line 2b. Particulate Potential to Release

Calculated based on three factors: containment (Table 6-9), source type (Table 6-4), and migration potential (Figure 6-2). The impounded tailings are assigned a containment value of 7 (clean soil cover, between 1 and 3 feet thick); a source type value of 28 (tailings pile); and a migration potential of 11 (northeast Utah). The floodplain sediments are assigned a containment value of 10; a source type value of 22 (contaminated soil), and; a migration potential of 11. These result in particulate potential to release values of:

For the impounded tailings: (28 + 11) x 7 = 273;
For the floodplain sediments: (22 + 11) x 10 = 330.

Line 2c. Potential to Release (higher of lines 2a and 2b)

For the impounded tailings, the higher value is 273;
For the floodplain sediments, the higher value is 330.

Line 3. Likelihood of Release (higher of lines 1 and 2c).

For the impounded tailings, the higher value is 273;
For the floodplain sediments, the higher value is 330.

<u>Waste Characteristics</u>

Line 4. Toxicity/Mobility

Toxicity factors have been assigned from Reference 2, and again do not represent actual toxicity associated with the compounds found on the site (see Davis et al, 1992); rather,

they represent the toxicity of individual elements that make up those compounds. For arsenic, cadmium and lead, those factors are set by the HRS at 10,000. Mobility factors for both sources are taken from Figure 6-3, since the observed release criteria used by EPA for this line do not represent current site conditions. The particulate mobility factor value for the area is 0.0008. The toxicity/mobility factor value from Table 6-13 is 8, not 20 as assigned by EPA.

Line 5. Hazardous Waste Quantity

The HRS Final Rule assigns the same value here as calculated previously in Line 7 of the Surface Water Route Scoresheet:

For the impounded tailings, the score is 10,000;
For the floodplain sediments, the score is 1.

Line 6. Waste Characteristics

Calculated by multiplying values on lines 4 and 5.

For the impounded tailings: 8 x 10,000 = 80,000, and the assigned value from Table 2-7 is 10.

For the floodplain sediments: 8 x 1 = 8, and the assigned value from Table 2-7 is 1.

Targets

As described earlier for line 1, the 1986 observed release data is no longer applicable to current conditions at the site and all targets should be evaluated for potential contamination.

Line 7. Nearest Individual

The EPA assigned value is 2, for 1/4 to 1/2 mile.

Line 8. Population

Line 8a. Level I Concentrations

No Level I concentrations, assigned score is 0, per EPA.

Line 8b. Level II Concentrations

No Level II concentrations, assigned score is 0, per EPA.

Line 8c. Potential Contamination

Persons residing in Park City can hardly be exposed to particulates from the Richardson Flat tailings site due to

the intervening topography. However, the HRS does not consider this sort of physical phenomenon, only distance is important. An argument could be made with the EPA's distribution of population within the 2-3 mile distance ring: perhaps 1103.2 or more of Park City residents are actually in the 3-4 mile category, which would drop the combined score from 12.7 to 6. However, with the methodology used by EPA for distributing population in the absence of actual data, a score of 12.96 is generated.

Line 8d. Population (lines 8a + 8b + 8c)

(0 + 0 + 12.96) for a total population value of 12.96.

Line 9. Resources

Again, no evidence exists that the irrigated pasture indicated in the documentation is, in fact, "commercial agriculture". However, the value assigned is 5.

Line 10. Sensitive Environments

Line 10a. Actual Contamination

As described earlier for Line 1, the 1986 observed release does not represent current site conditions; hence, the actual contamination score should be 0, not 25 given by EPA.

Line 10b. Potential Contamination

The wetlands near the site are greater than 1 acre, but less than 50 acres (assigned value is 25). Per EPA's distance distribution, 10 acres are within the 0-1/4 mile distance (25 x 0.25 distance weighting) and 5 acres are within the 1/4 to 1/2 mile distance (25 x 0.054 weighting). Summing the distance weighted values yields a value of 7.60.

Line 10c. Sensitive Environments

Adding lines 10a and b as directed by the HRS Final Rule yields a total score for sensitive environments of 7.60, rather than 25.13 as calculated by EPA.

Line 11. Targets (lines 7 + 8d + 9 + 10c)

(2 + 12.96 + 5 + 7.6) for a total targets score of 27.56.

Air Migration Pathway Score

Line 12. Pathway Score (S_a) [(lines 3 x 6 x 11)/ 82,500]

For the impounded tailings:
(273 x 10 x 27.56)/ 82,500 = **0.91;**

For the floodplain sediments:
(330 x 1 x 27.56)/ 82,500 = **0.11.**

Conclusions - Air Migration Pathway

The above are the correct values and scores to be used for the evaluation of the Air Migration Pathway component of the overall HRS Site Score. These corrected values utilize current site information, not the historic information used by EPA. The scores for either site are well below the EPA derived score of 9.62 for this pathway.

IV. OVERALL HRS SITE SCORE WORKSHEETS

The following are the scoresheets summarizing the previous scoring values that were assigned and calulated for the two sites. Each site has a scoresheet completed for:

Table 4-1, Surface Water Overland/Flood Migation Component Scoresheet;

Table 6-1, Air Migration Pathway Scoresheet; and,

Worksheet for Computing HRS Site Score.

These scoresheets utilize the format presented in 40 CFR Part 300, Appendix A, and in EPA, 1992.

TABLE 4-1
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
FOR THE IMPOUNDED TAILINGS SITE

FACTOR CATEGORIES AND FACTORS	MAXIMUM VALUE	VALUE ASSIGNED
DRINKING WATER THREAT		
Likelihood of Release:		
1. Observed Release	550	0
2. Potential to Release by Overland Flow:		
2a. Containment	10	0
2b. Runoff	25	0
2c. Distance to Surface Water	25	20
2d. Potential to Release by Overland Flow	500	0
3. Potential to Release by Flood:		
3a. Containment (Flood)	10	10
3b. Flood Frequency	50	7
3c. Potential to Release by Flood	500	70
4. Potential to Release (lines 2d + 3c)	500	70
5. Likelihood of Release (higher of lines 1 and 4)	550	70
Waste Characteristics:		
6. Toxicity/Persistence	(a)	10,000
7. Hazardous Waste Quantity	(a)	10,000
8. Waste Characteristics	100	100
Targets:		
9. Nearest Intake	50	0
10. Population:		
10a. Level I Concentrations	(b)	0
10b. Level II Concentrations	(b)	0
10c. Potential Contamination	(b)	0
10d. Population	(b)	0
11. Resources	5	5
12. Targets (lines 9 + 10d + 11)	(b)	5
Drinking Water Threat Score:		
13. Drinking Water Threat Score ([lines 5 x 8 x 12] / 82,500)	100	0.42

TABLE 4-1 (cont'd)
IMPOUNDED TAILINGS SITE

FACTOR CATEGORIES AND FACTORS	MAXIMUM VALUE	ASSIGNED VALUE
HUMAN FOOD CHAIN THREAT		
Likelihood of Release:		
14. Likelihood of Release (same as value in line 5).....	550	70
Waste Characteristics:		
15. Toxicity/Persistence/Bioaccumulation.....	(a)	$5x10^8$
16. Hazardous Waste Quantity.....	(a)	10,000
17. Waste Characteristics.....	1,000	1,000
Targets:		
18. Food Chain Individual.....	50	0
19. Population:		
19a. Level I Concentrations.....	(b)	0
19b. Level II Concentrations.....	(b)	0
19c. Potential Human Food Chain Contamination.....	(b)	0.0003
19d. Population (lines 19a + 19b + 19c).....	(b)	0.0003
20. Targets (lines 18 + 19d).....	(b)	0.0003
Human Food Chain Threat Score:		
21. Human Food Chain Threat Score ([lines 14 x 17 x 20] / 82,500.....	100	0.00025
ENVIRONMENTAL THREAT		
Likelihood of Release:		
22. Likelihood of Release (same as value in line 5).....	550	70
Waste Characteristics:		
23. Ecosystem Toxicity/Persistence/Bioaccumulation.....	(a)	$5x10^8$
24. Hazardous Waste Quantity.....	(a)	10,000
25. Waste Characteristics.....	1,000	1,000
Targets:		
26. Sensitive Environments:		
26a. Level I Concentrations.....	(b)	0
26b. Level II Concentrations.....	(b)	0
26c. Potential Contamination.....	(b)	10.05
26d. Sensitive Environments (lines 26a+26b+26c)...	(b)	10.05
27. Targets (value from line 26d).....	(b)	10.05

TABLE 4-1 (cont'd)
IMPOUNDED TAILINGS SITE

FACTOR CATEGORIES AND FACTORS	MAXIMUM VALUE	ASSIGNED VALUE
Environmental Threat Score:		
28. Environmental Threat Score ([lines 22 x 25 x 27] / 82,500).....	60	8.53
Surface Water Overland/Flood Migration Component Score for a Watershed		
29. Watershed Score (lines 13 + 21 + 28).....	100	8.95
Surface Water Overland/Flood Migration Component Score		
30. Component Score (S_{of}) (highest watershed score).....	100	8.95

(a) Maximum value applies to waste characteristics category.
(b) Maximum value not applicable.

TABLE 6-1
AIR MIGRATION PATHWAY SCORESHEET
FOR THE IMPOUNDED TAILINGS SITE

FACTOR CATEGORIES AND FACTORS	MAXIMUM VALUE	VALUE ASSIGNED
Likelihood of Release:		
1. Observed Release	550	0
2. Potential to Release:		
2a. Gas Potential to Release	500	0
2b. Particulate Potential to Release	500	273
2c. Potential to Release (higher of 2a and 2b)	500	273
3. Likelihood of Release (higher of lines 1 and 2c)	550	273
Waste Characteristics:		
4. Toxicity/Mobility	(a)	8
5. Hazardous Waste Quantity	(a)	10,000
6. Waste Characteristics	100	10
Targets:		
7. Nearest Individual	50	2
8. Population:		
8a. Level I Concentrations	(b)	0
8b. Level II Concentrations	(b)	0
8c. Potential Contamination	(b)	12.96
8d. Population (lines 8a + 8b + 8c)	(b)	12.96
9. Resources	5	5
10. Sensitive Environments:		
10a. Actual Contamination	(c)	0
10b. Potential Contamination	(c)	7.60
10c. Sensitive Environments (lines 10a + 10b)	(c)	7.60
11. Targets (lines 7 + 8d + 9 + 10c)	(b)	27.56
Air Migration Pathway Score:		
12. Pathway Score (S_a) [(lines 3 x 6 x 11] / 82,500)	100	0.91

(a) Maximum value applies to waste characteristics category.
(b) Maximum value not applicable.
(c) No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum of 60.

WORKSHEET FOR COMPUTING HRS SITE SCORE
SITE #1, THE IMPOUNDED TAILINGS

		S	S^2
1.	Groundwater Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	NE	NE
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	8.95	80.11
2b.	Groundwater to Surface Water Migration Component (from Table 4-25, line 28	NE	NE
2c.	Surface Water Migration Pathway Score (S_{sw}) (enter larger of lines 2a and 2b as score)	8.95	80.11
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	NE	NE
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	0.91	0.828
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		80.93
6.	**HRS Site Score:** Divide the value on line 5 by 4 and take the square root.		4.498

NE = Route Not Evaluated

TABLE 4-1
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET FOR THE FLOODPLAIN SEDIMENTS SITE

FACTOR CATEGORIES AND FACTORS	MAXIMUM VALUE	VALUE ASSIGNED
DRINKING WATER THREAT		
Likelihood of Release:		
1. Observed Release	550	0
2. Potential to Release by Overland Flow:		
2a. Containment	10	10
2b. Runoff	25	0
2c. Distance to Surface Water	25	25
2d. Potential to Release by Overland Flow	500	250
3. Potential to Release by Flood:		
3a. Containment (Flood)	10	10
3b. Flood Frequency	50	50
3c. Potential to Release by Flood	500	500
4. Potential to Release (lines 2d + 3c)	500	500
5. Likelihood of Release (higher of lines 1 and 4)	550	500
Waste Characteristics:		
6. Toxicity/Persistence	(a)	10,000
7. Hazardous Waste Quantity	(a)	1
8. Waste Characteristics	100	10
Targets:		
9. Nearest Intake	50	0
10. Population:		
10a. Level I Concentrations	(b)	0
10b. Level II Concentrations	(b)	0
10c. Potential Contamination	(b)	0
10d. Population	(b)	0
11. Resources	5	5
12. Targets (lines 9 + 10d + 11)	(b)	5
Drinking Water Threat Score:		
13. Drinking Water Threat Score ([lines 5 x 8 x 12] / 82,500)	100	0.30

TABLE 4-1 (cont'd)
FLOODPLAIN SEDIMENTS SITE

FACTOR CATEGORIES AND FACTORS	MAXIMUM VALUE	ASSIGNED VALUE
HUMAN FOOD CHAIN THREAT		
Likelihood of Release:		
14. Likelihood of Release (same as value in line 5).....	550	500
Waste Characteristics:		
15. Toxicity/Persistence/Bioaccumulation.....	(a)	$5x10^8$
16. Hazardous Waste Quantity.....	(a)	1
17. Waste Characteristics.....	1,000	100
Targets:		
18. Food Chain Individual.....	50	0
19. Population:		
19a. Level I Concentrations.....	(b)	0
19b. Level II Concentrations.....	(b)	0
19c. Potential Human Food Chain Contamination.....	(b)	0.0003
19d. Population (lines 19a + 19b + 19c).....	(b)	0.0003
20. Targets (lines 18 + 19d).....	(b)	0.0003
Human Food Chain Threat Score:		
21. Human Food Chain Threat Score ([lines 14 x 17 x 20] / 82,500.....	100	0.00018
ENVIRONMENTAL THREAT		
Likelihood of Release:		
22. Likelihood of Release (same as value in line 5).....	550	500
Waste Characteristics:		
23. Ecosystem Toxicity/Persistence/Bioaccumulation.....	(a)	$5x10^8$
24. Hazardous Waste Quantity.....	(a)	1
25. Waste Characteristics.....	1,000	100
Targets:		
26. Sensitive Environments:		
26a. Level I Concentrations.....	(b)	0
26b. Level II Concentrations.....	(b)	0
26c. Potential Contamination.....	(b)	10.05
26d. Sensitive Environments (lines 26a+26b+26c)...	(b)	10.05
27. Targets (value from line 26d).....	(b)	10.05

TABLE 4-1 (cont'd)
FLOODPLAIN SEDIMENTS SITE

FACTOR CATEGORIES AND FACTORS	MAXIMUM VALUE	ASSIGNED VALUE
Environmental Threat Score:		
28. Environmental Threat Score ([lines 22 x 25 x 27] / 82,500).....	60	6.09
Surface Water Overland/Flood Migration Component Score for a Watershed		
29. Watershed Score (lines 13 + 21 + 28).....	100	6.39
Surface Water Overland/Flood Migration Component Score		
30. Component Score (S_{of}) (highest watershed score).....	100	6.39

(a) Maximum value applies to waste characteristics category.
(b) Maximum value not applicable.

TABLE 6-1
AIR MIGRATION PATHWAY SCORESHEET
FOR THE FLOODPLAIN SEDIMENTS SITE

FACTOR CATEGORIES AND FACTORS	MAXIMUM VALUE	VALUE ASSIGNED
Likelihood of Release:		
1. Observed Release	550	0
2. Potential to Release:		
2a. Gas Potential to Release	500	0
2b. Particulate Potential to Release	500	330
2c. Potential to Release (higher of 2a and 2b)	500	330
3. Likelihood of Release (higher of lines 1 and 2c)	550	330
Waste Characteristics:		
4. Toxicity/Mobility	(a)	8
5. Hazardous Waste Quantity	(a)	1
6. Waste Characteristics	100	1
Targets:		
7. Nearest Individual	50	2
8. Population:		
8a. Level I Concentrations	(b)	0
8b. Level II Concentrations	(b)	0
8c. Potential Contamination	(b)	12.96
8d. Population (lines 8a + 8b + 8c)	(b)	12.96
9. Resources	5	5
10. Sensitive Environments:		
10a. Actual Contamination	(c)	0
10b. Potential Contamination	(c)	7.60
10c. Sensitive Environments (lines 10a + 10b)	(c)	7.60
11. Targets (lines 7 + 8d + 9 + 10c)	(b)	27.56
Air Migration Pathway Score:		
12. Pathway Score (S_a) [(lines 3 x 6 x 11] / 82,500)	100	0.11

(a) Maximum value applies to waste characteristics category.
(b) Maximum value not applicable.
(c) No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum of 60.

WORKSHEET FOR COMPUTING HRS SITE SCORE
FOR SITE #2, THE FLOODPLAIN SEDIMENTS

		S	S^2
1.	Groundwater Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	NE	NE
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	6.39	40.83
2b.	Groundwater to Surface Water Migration Component (from Table 4-25, line 28	NE	NE
2c.	Surface Water Migration Pathway Score (S_{sw}) (enter larger of lines 2a and 2b as score)	6.39	40.83
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	NE	NE
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	0.11	0.012
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		40.85
6.	**HRS Site Score:** Divide the value on line 5 by 4 and take the square root.		3.196

NE = Route Not Evaluated

V. REFERENCES

References cited from the HRS Documentation Record (EPA, 1992):

Reference 2: Superfund Chemical Database Matrix, Hazardous Substance Reference Table, 4/05/91, Assigned HRS Factor Values for 305 Substances and Hazardous Substance Benchmark Table 4/05/91, 305 Substances.

Reference 4: Ecology and Environment, Inc., 1989, Supplemental Site Inspection Report, Richardson Flat Tailings, Summit County, UT, TDD #F08-8903-06.

Reference 7: EMSL-Las Vegas, August 24, 1978, Aerial Photograph of the Richardson Flat Tailings Site, PIC #91706 Frame 175.

Reference 8: EMSL-Las Vegas, August 17, 1981, Color IR Photograph of the Richardson Flat Tailings Site, PIC #91706 Frame 35.

Reference 11: Ecology and Environment, Inc., September 9, 1987, Analytical Results Report For Air Sampling at Richardson Flat, Park City, UT, TDD #R8-8608-05.

Reference 11a: Charney, M., 1991, Supplemental memo regarding data qualifiers for air sampling data generated for the Richardson Flat Tailings Site, Summit County, Utah.

Reference 12: Ecology and Environment, Inc., October 25, 1985, Analytical Results Report for the Richardson Flat Tailings, Summit County, UT, TDD #R8-8508-07.

Reference 16: U. S. Department of the Interior, 1990, Wetland Inventory Map, Park City East, Utah.

Reference 16a: U. S. Department of the Interior, 1990, Wetland Inventory Map, Wanship, Utah.

Reference 19: Personal Communication from Steve Yarbrough (E & E FIT) to Kevin Mackey (E & E FIT) Regarding Direct Observation of Flood Plain Tailings into Silver Creek, May 16, 1991.

Reference 20: Supplemental Photo Log Showing Flood Plain Tailings Slumping Into Silver Creek.

Reference 25: Utah State Department of Health, July 6, 1990, correspondence regarding the documentation of tailings material sloughing into the onsite diversion ditch at Richardson Flat Tailings.

Reference 31: Lilquist, Nancy, June 27, 1991, personal communication regarding fishery production values in Silver Creek, Summit County, UT.

Reference 33: Personal communication with Mrs. Standley Pace regarding commercial use of hay grown in the Silver Creek drainage, 1991.

Other References Cited:

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NOAA, 1973. Precipitation Frequency Atlas of the United States. Prepared by the U. S. Department of Commerce, National Oceanographic and Atmospheric Administration.

FEMA, 1986. FIRM Flood Insurance Rate Map, Summit County, Utah (unincorporated areas). Panel 525 of 625, Community Panel Number 490134 0525 B. Effective Date: July 17, 1986. Federal Emergency Management Agency.

Davis, A., Ruby, M., and Bergstrom, P., 1992. Bioavailability of Arsenic and Lead in Soils from the Butte, Montana Mining District. Environ. Sci. Technol., Vol. 26, No. 3, 1992, pgs. 461-468.

Sax, N. I., 1984. Dangerous Properties of Industrial Materials, 6th Edition, page 2,482.

Bangerter, J. L., 1992. Telecommunication with Kent Summers, Utah Division of Wildlife Resources, March 20, 1992.

Ray, J. D., 1992. Telecommunication with Kent Summers, Utah Division of Wildlife Resources, March 26, 1992.

40 CFR Part 300, Appendix A, 1990. Hazard Ranking System; Final Rule. Federal Register / Vol. 55, No. 241, / Friday December 14, 1990 / Rules and Regulations. Pages 51532-51667. Effective date: March 14, 1991.

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HRS Evaluation
For Richardson Flat Tailings
Park City, Utah

Prepared For

Kerry C. Gee
United Park City Mines Co.
309 Kearns Bldg.
Salt Lake City, Utah 84101

Prepared By
MultiTech Services Division of MSE, Inc.
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505 Centennial Ave.
Butte, MT 59702

August 19, 1988

suspended sediments, probably derived from floodplain and streambank tailings deposits along Silver Creek.

Tailings samples collected on Silver Creek demonstrate that the older, floodplain tailings differ in geochemical character from those at Richardson Flat (Table 3). The Richardson Flat tailings exhibit higher arsenic (3.3x) and manganese (7.3x), while the floodplain tailings show higher lead (1.9x) and mercury (9x). These differences are probably due to several different factors.

TABLE 3

Tailings Composition Comparison (Measurements in ppm)

	As	Pb	Hg	Mn
Richardson Flat Tailings(1)	1207	4833	1.31	3498
Silver Creek Flood Plain Tailings(2)	367	9213	11.74	480

(1) Mean value of six samples collected in 1985 by E&E and presented in their Analytical Results Report, dated 10/25/85.

(2) Mean value of three samples collected on 8/1/88 and analyzed in MSE's laboratory following EPA CLP protocols.

The ratio of Pb to As is also distinctive between the two tailings as is the Hg concentration. Comparison of the Pb/As ratio found in water samples from Silver Creek to those in the two tailings can yield a probable source of metals in the stream (Table 4).

TABLE 4

Comparison of Pb/As Ratios and Hg Concentrations

	Pb/As Ratio	Hg concentration
Richardson Flat Tailings	4.0	1.31 ppm
Silver Creek Floodplain Tailings	25.1	11.74 ppm
Silver Creek Water RT-SW-3 (1985, E&E)	30.5	0.57 mg/L
Stream Sediments in Silver Creek(1)	24.5	2.45 ppm

(1) Mean value of five sediment samples collected in Silver Creek on 8/1/88 between Prospector Square tailings and the railroad trestle at Keetley Junction.

Using the similarity in Pb/As ratios and Hg concentrations it can be demonstrated that metals in the sediments and water of Silver Creek are probably derived from floodplain tailings. Stream sediment data (Table 5) also clearly demonstrate a decay of metal concentrations with distance from Prospector Square tailings, indicating that they, not Richardson Flat, are the source of metals to Silver Creek, both in the past (floodplain tailings) and currently (E&E 1985 surface water data, and 8/1/88 surface water data).

TABLE 5

Stream Sediment Data (in ppm) collected on August 1, 1988 at locations on Map 2

Station	As	Pb	Hg	Cu	Mn
PC-6	200	5,320	3.88	260	840
PC-5	220	4,750	2.37	200	1510
PC-3	190	6,650	2.77	200	1660
PC-2	200	3,660	1.69	340	1810
PC-1	140	2,970	1.53	170	1280

The Prospector Square and associated floodplain tailing deposits, therefore, are responsible for the "observed release" in 1985 and continue to be a source of metals to Silver Creek, especially during higher flows.

In summary, the 1985 sampling along Silver Creek was clearly flawed. A downstream sample was not collected, and hence, no release can be attributed to Richardson Flat. NPDES data properly collected in up- and downstream locations show no statistically significant difference between upstream and downstream stations. The increase observed in 1985 can be attributed to floodplain and streamside tailings, which originated upstream and reside in Silver Creek's floodplain between Prospector Square and Richardson Flat.

Since no direct evidence of an observed release was documented, Section 4.2 (Route Characteristics) must be evaluated instead.

Photograph of Sampling Location
RFT-SW/SE-2 In Which
Silver Creek Stream Channel Is Clearly Visible

BEFORE THE UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

IN THE MATTER OF THE PROPOSED LISTING OF RICHARDSON FLAT TAILINGS, SUMMIT COUNTY, UTAH, ON THE NATIONAL PRIORITIES LIST	))))))	AFFIDAVIT OF EDWIN L. OSIKA, JR. IN SUPPORT OF THE COMMENTS OF UNITED PARK CITY MINES COMPANY IN OPPOSITION TO PROPOSED RULE

STATE OF UTAH)
): ss.
COUNTY OF SALT LAKE)

EDWIN L. OSIKA, JR., being duly sworn upon his oath, deposes and says:

1. I am currently the Executive Vice President of United Park City Mines Company.

<u>July 18-20, 1989 FIT Site Inspection</u>

2. In July 1989, I was employed as Vice President of United Park City Mines Company.

3. During the period of July 18-20, 1989, I personally accompanied Ecology & Environment, Inc.'s Field Investigation Team ("FIT") during their sampling efforts and site investigation for the United States Environmental Protection Agency at the Richardson Flat Tailings site, Summit County, Utah.

4. William J. Bullock, environmental engineer for MSE, Inc., Butte, Montana, and consultant for United Park City Mines company, and Kerry Gee, geologist for United Park City Mines Company, also accompanied the FIT members at the Richardson Flat Tailings site.

5. I personally observed the FIT conducting the supplemental site inspection investigation and collecting samples at the Richardson Flat Tailings site from July 18-20, 1989.

6. During the July 18-20, 1989 site inspection, I did not visually observe any release of tailings or hazardous substances into the Diversion Ditch at the site, and I did not visually observe any tailings or hazardous substances "sloughing" or "slumping" into the Diversion Ditch at the Richardson Flat Tailings site.

7. During the July 18-20, 1989 site inspection, I did not visually observe any release of tailings or hazardous substances into Silver Creek, and I did not observe any tailings or hazardous substances "sloughing" or "slumping" directly into Silver Creek.

8. During the July 18-20, 1989 site inspection, no member of the FIT called my attention to or indicated his observation of any release of tailings or a hazardous substance into the Diversion Ditch or into Silver Creek or any "sloughing" or

"slumping" of tailings or a hazardous substance into the Diversion Ditch or into Silver Creek.

9. Because the primary purpose of this site investigation by the FIT from July 18-20, 1989, was to verify a release of contaminants into Silver Creek or other surface water, it would seem to me that any observed release into surface water would have been documented in the 1989 Supplemental Site Inspection Report and would have been verified during the July 18-20, 1989 site inspection by additional sampling.

June 7 and June 14, 1990 UBSHW Site Visits

10. On June 7, 1990 and June 14, 1990, as Vice President for United Park City Mines Company, I personally accompanied Muhammad Slam and Jason Knowlton, employees of the Utah Bureau of Solid and Hazardous Waste (hereinafter "the UBSHW employees"), on their site visits at the Richardson Flat Tailings site, Summit County, Utah.

11. Kerry Gee, geologist for United Park City Mines Company, also accompanied the UBSHW employees on their site visits at the Richardson Flat Tailings site on June 7 and June 14, 1990.

12. I personally accompanied the two UBSHW employees at all times during the June 7 and June 14, 1990 site visits.

13. During the June 7 and June 14, 1990 site visits, the UBSHW employees did not take any samples or perform any tests at the Richardson Flat Tailings site. The two UBSHW employees did take certain measurements at the site, took a number of photographs, and visually observed the site.

14. During the June 7 and June 14, 1990 site visits, I did not visually observe any release of tailings or hazardous substances into the Diversion Ditch at the site, and I did not visually observe any tailings or hazardous substances "sloughing" or "slumping" into the Diversion Ditch at the Richardson Flat Tailings site.

15. During the June 7 and June 14, 1990 site visits, I did not visually observe any release of tailings or hazardous substances into Silver Creek, and I did not visually observe any tailings or hazardous substances "sloughing" or "slumping" directly into Silver Creek at the Richardson Flat Tailings site.

16. During the June 7 and June 14, 1990 site visits, neither of the UBSHW employees called my attention to or indicated his observation of any release of tailings or hazardous substance into the Diversion Ditch or into Silver Creek or any "sloughing" or "slumping" of tailings or a hazardous substance into the Diversion Ditch or into Silver Creek.

17. By transmittal letter, dated June 25, 1990 (a copy of which is attached hereto), I received from UBSHW a copy of UBSHW's finalized Memorandum dated June 18, 1990, reporting on the "Richardson Flat Site visits on June 7 and June 14, 1990" (a copy of which is attached hereto). The June 18, 1990 Memorandum does not state that any UBSHW employee observed any release of a hazardous substance into surface water, nor that tailings were observed "sloughing" into the Diversion Ditch on either the June 7 or the June 14, 1990 site visits.

18. By transmittal letter, dated September 20, 1990 (a copy of which is attached hereto), I received from UBSHW a copy of the UBSHW's Revised Memorandum reporting on the "Richardson Flat Site visits on June 7 and June 14, 1990" (a copy of which is attached hereto). The Revised Memorandum is dated July 6, 1990 on the first page; however, the second page is dated July 9, 1990 (bottom left-hand corner) and the third page is dated August 6, 1990 (bottom left-hand corner).

18. The Revised Memorandum dated July 6, 1990, includes, for the first time, the statement that the "sloughing of tailings into the Diversion Ditch was observed."

DATED this 3rd day of April, 1992.

EDWIN L. OSIKA, JR.

SUBSCRIBED AND SWORN TO before me this 3rd day of April, 1992.

Notary Public
JOSIE G. MCKENZIE
215 So. State 12th Fl.
Salt Lake City, Utah 84151
My Commission Expires
June 22, 1993
State of Utah

Notary Public
Residing at: Davis County

My Commission Expires:
6-22-93

RJB:040392A

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

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Director

Bureau of Solid & Hazardous Waste
288 North 1460 West, P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6170

JUN 2 5 1990

Mr. Edwin L. Osika, Jr.
United Park City Mines, Co.
309 Kearns Bldg.
Salt Lake City, Utah 84101

Dear Mr. Osika:

Enclosed is a copy of a memorandum which includes the findings of our visits to Richardson Flat Site on June 7, and June 14, 1990. Originals of all photographs which are attached to this memorandum were provided to you during the site visits.

If you have any questions, please contact Muhammad Slam of my staff at 801-538-6170.

Sincerely,

Kent P. Gray
CERCLA Branch Manager

Enclosure

KP/MS/al

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

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Executive Director
Kenneth L Alkema
Director

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MEMORANDUM

TO: File

FROM: Muhammad Slam and Jason Knowlton

DATE: June 18, 1990

SUBJECT: Richardson Flat Site visits on June 7, and June 14, 1990

Muhammad Slam and Jason Knowlton of the Utah Bureau of Solid and Hazardous Waste (UBSHW) conducted site visits on Richardson Flat Tailings Pond in Summit County, Utah. The purpose of these visits was to determine if the potential for contaminant releases from the site to the Silver Creek (surface water) exists. UBSHW personnel were accompanied by Edwin L. Osika and Kerry Gee of the United Park City Mines during both visits. Weather on both days (June 7 and 14) was fair and warm (65-75°F) with moderate to strong winds. The following observations were made during the site visits.

1. SLOPE OF THE DIKE:

The dike slopes approximately 55-65% for about 45 feet which is the distance from the top edge of the dike to its toe (See Figure 3).

2. SLOPE OF THE INTERVENING TERRAIN:

A terrace sloping about 3% extends westward approximately 90 feet from the toe of the dike. This is followed westward by a pronounced "step" about 10 feet wide with slope ranging for 20-70%. A relatively flat marsh land extends approximately 200 feet from the toe of the terrace to Silver Creek. Based upon the measurements taken during the site visits on June 7, 1990 the average terrain slope from the toe of the Tailings Pond dike to Silver Creek is 3-5%. The distance from the toe to the dike to the Silver Creek is approximately 300 feet.

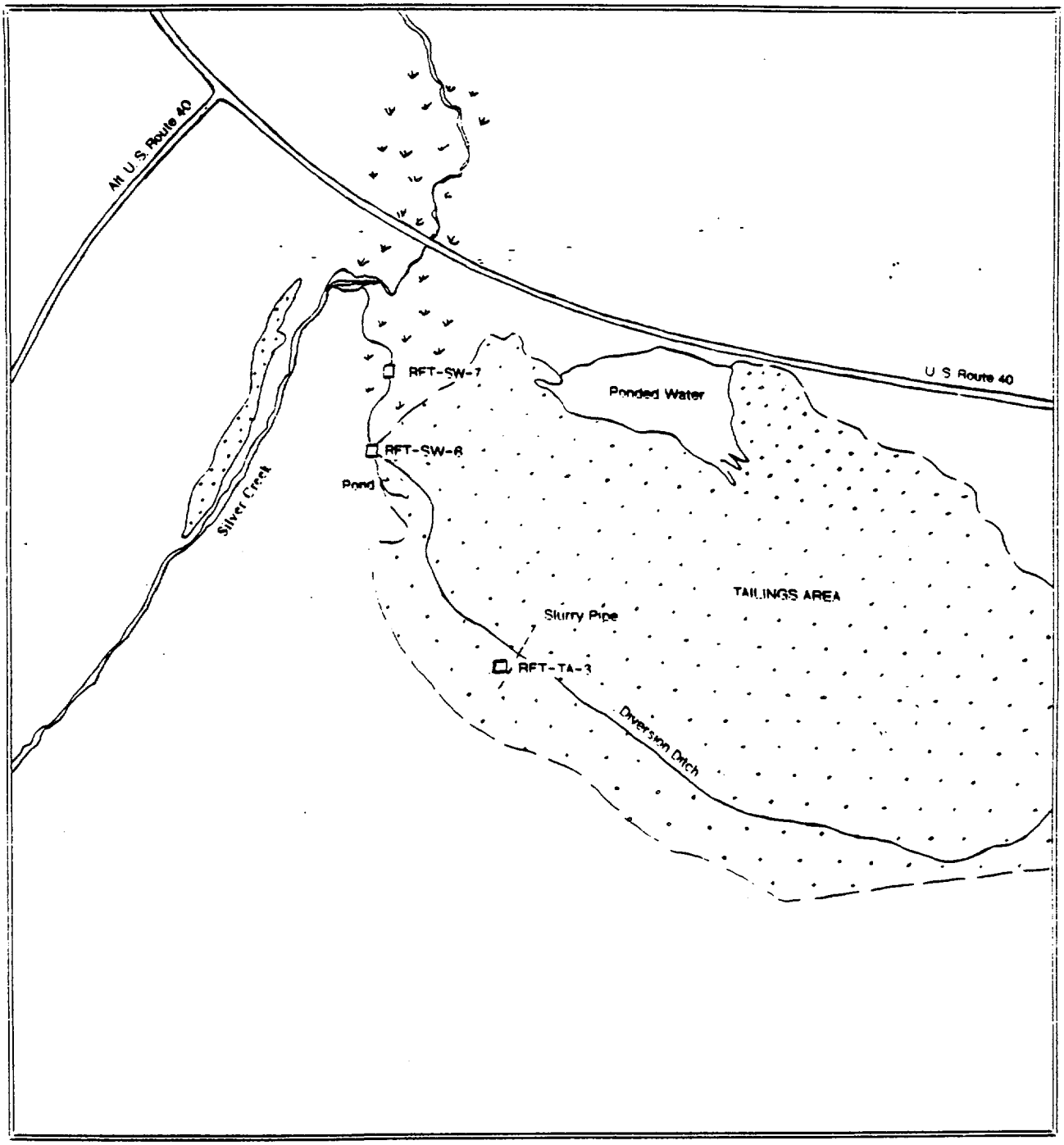
3. DIVERSION DITCH AND CHANNEL FLOW INTO THE SILVER CREEK:

The diversion ditch flows near the Souther edge of the tailings pond from East to West. The diversion ditch originates as a draining ditch from the east of the tailings pond and flows towards the west until it reaches a small water pond (See Figure 1) where the RFT-SW-6 sample was collected by the FIT. The diversion ditch comes in contact with the water pond and flows through a vegetated area to the North west until it drains into Silver Creek less than 50 feet south of U.S. Route 40. The diversion ditch is about 3-4 feet wide prior to the water pond. From water

pond to the Silver Creek to diversion ditch channel narrows to about 12-18 inches. During the site visit on June 14, 1990 we followed the diversion ditch along the tailings pond towards the water pond (Figure 1). We also followed the diversion ditch from the pond throughout the vegetate area until it drains into the Silver Creek. There is a continuous channel flow of the diversion ditch from the water pond to the Silver Creek. The channel is about 12-18 inches wide. Edwin L. Osika and Kerry Gee of United Park City Mine also observed this channel of the diversion ditch during the visit. Photographs were taken during the site visit to document the channel flow and are included in this report. A copy of each photograph was provided to Edwin L. Osika.

4. DISTANCE TO SILVER CREEK:

Based upon measurements taken during the site visit, the distance from the toe of the tailings pond dike to the Silver Creek is approximately 300 feet. The distance from sample location RFT-SW-7 (collect by FIT) to Silver Creek is approximately 100 feet.

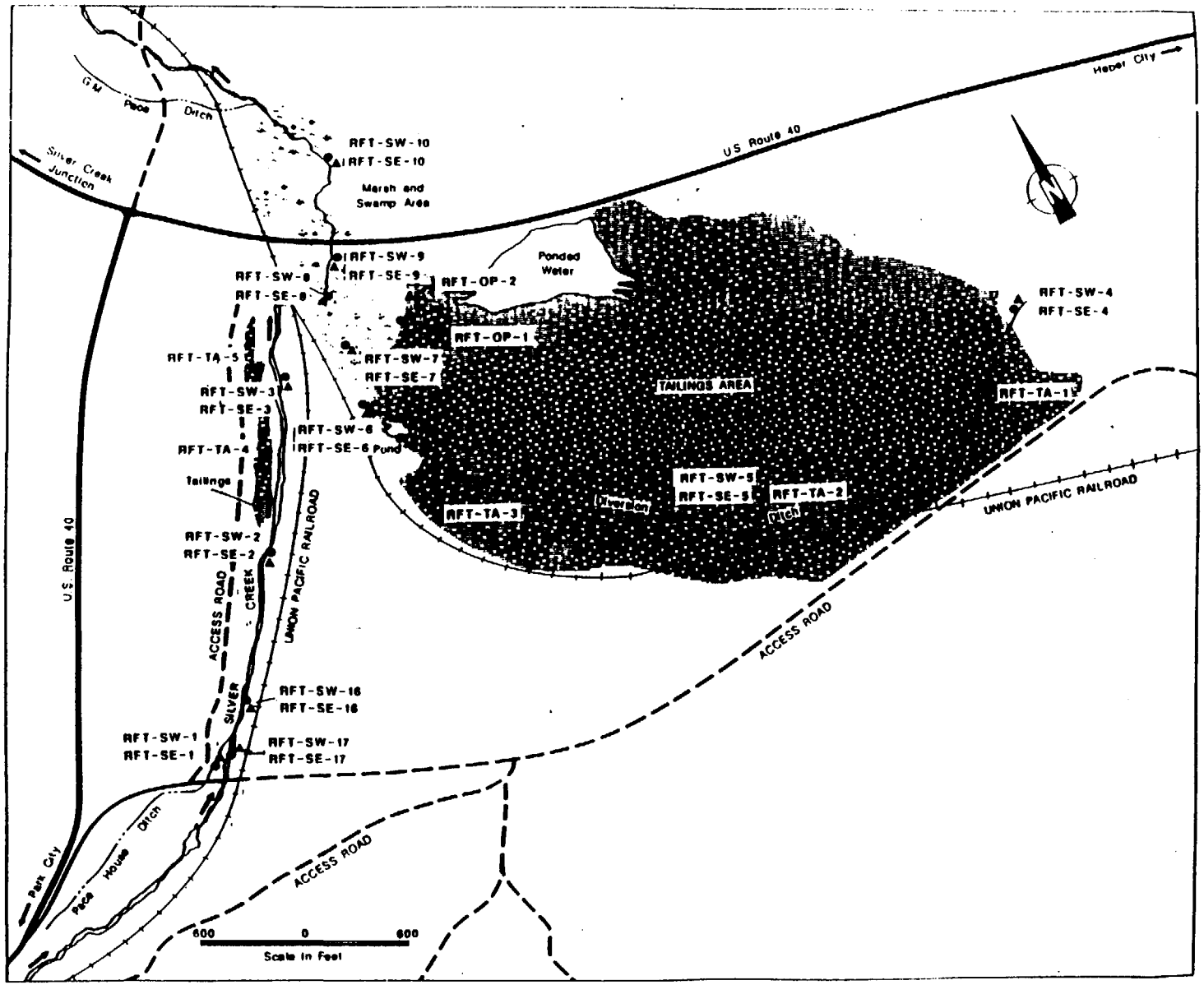


600 0 600

Scale in feet

N

UTAH DEPT. OF HEALTH Bureau of Solid and Hazardous Waste		
FIGURE 1		
by MAS	date 6/18/90	SCALE



LEGEND

- ■ Tailings sample
- ● Surface water sample
- ▲ Sediment sample

FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES
TASK REPORT TO THE E P A

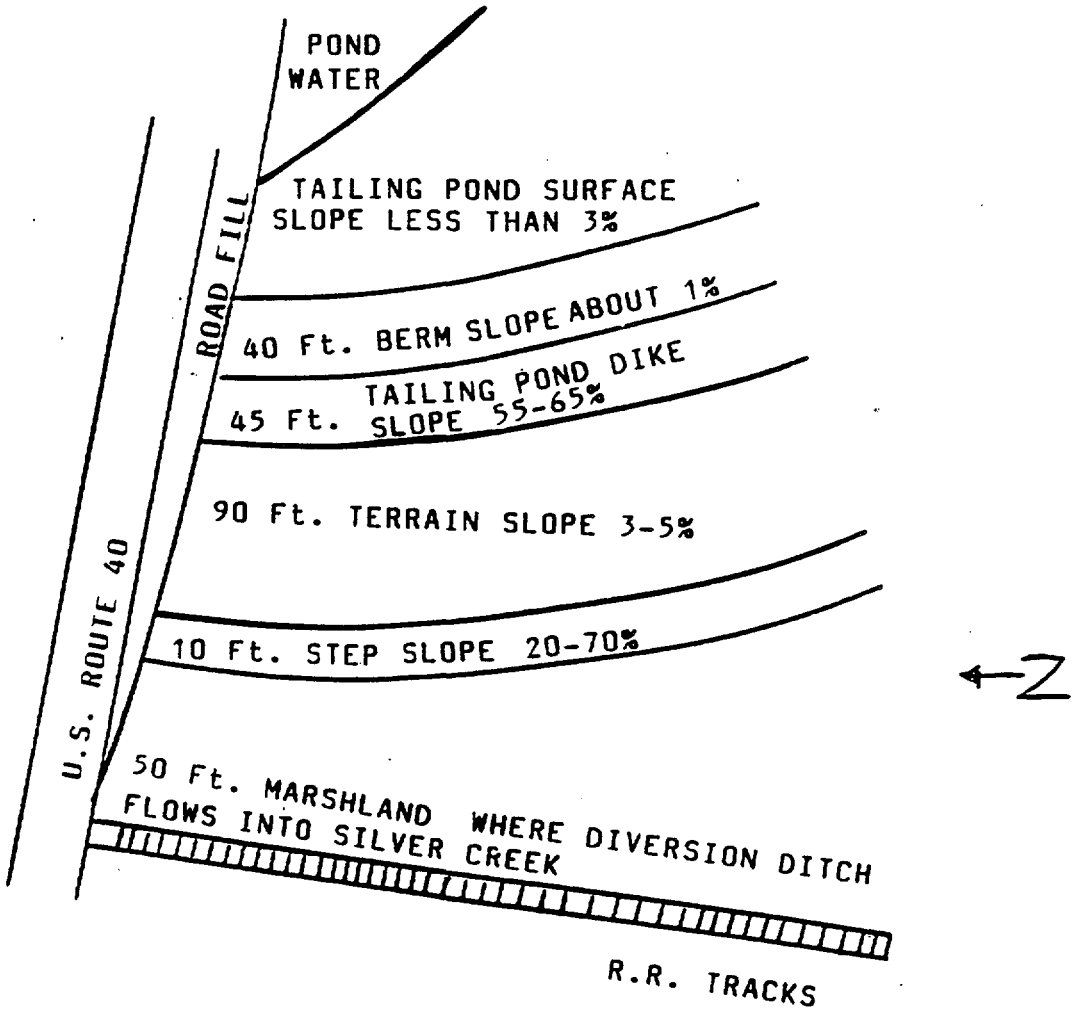
TITLE
RICHARDSON FLAT TAILINGS
Park City, Utah
SAMPLE LOCATION MAP

T D D F08-8803-08

FIG. 2

Date 08/89 Drawn by RSM Scale

FIGURE 3



NOT TO SCALE

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

Bureau of Solid & Hazardous Waste
288 North 1460 West P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6170

SEP 20 1990

Mr. Edwin L. Osika, Jr.
United Park City Mines, Co.
309 Kearns Bldg.
Salt Lake City, Utah 84101

Dear Mr. Osika:

Enclosed is a copy of a revised memorandum which includes the findings of our visits to Richardson Flat Site on June 7, and June 14, 1990. Originals of all photographs which are attached to this memorandum were provided to you during the site visits.

If you have any questions, please contact Muhammad Slam of my staff at 801-538-6170.

Sincerely,

Kent P. Gray, Director
Bureau of Environmental Response and Remediation

Enclosure

KP/MS/al

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

Bureau of Solid & Hazardous Waste
288 North 1460 West, P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6170

MEMORANDUM

TO: File

FROM: Muhammad Slam and Jason Knowlton

DATE: July 6, 1990

SUBJECT: Richardson Flat Site visits on June 7, and June 14, 1990

Muhammad Slam and Jason Knowlton of the Utah Bureau of Solid and Hazardous Waste (UBSHW) conducted site visits to the Richardson Flat Tailings Pond in Summit County, Utah. The purpose of these visits was to determine if the potential for contaminant releases from the site to Silver Creek (surface water) exists. UBSHW personnel were accompanied by Edwin L. Osika and Kerry Gee of United Park City Mines during both visits. Weather on both days (June 7 and 14) was fair and warm (65-75^{0}F) with moderate to strong winds. The following observations were made during the site visits.

1. DIVERSION DITCH AND CHANNEL FLOW INTO THE SILVER CREEK:

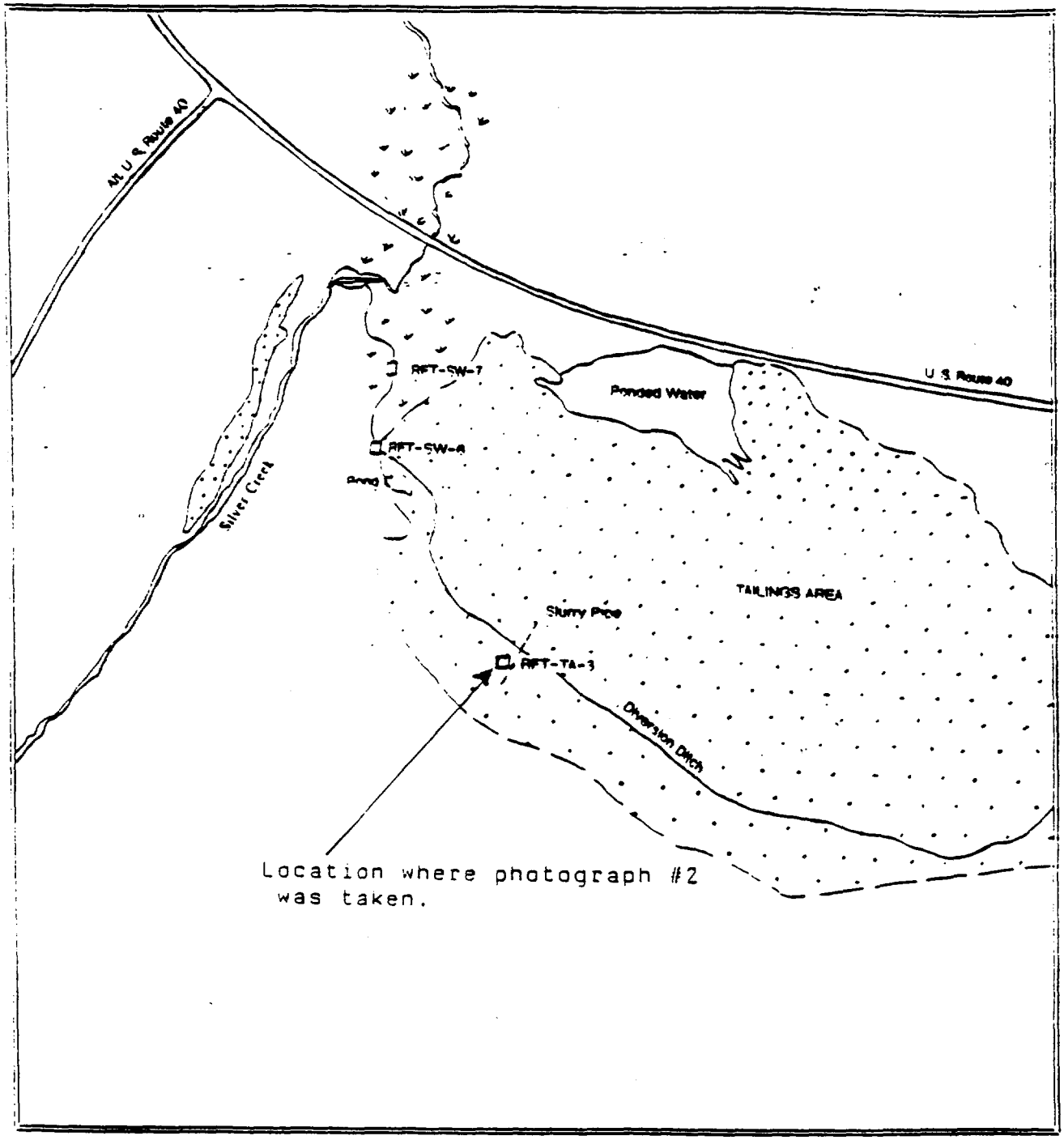
The diversion ditch flows near the Southern edge of the tailings pond from East to West. The diversion ditch originates as a draining ditch from the east of the tailings pond and flows towards the west until it reaches a small water pond (See Figure 1) where the RFT-SW-6 sample was collected by the FIT. The sloughing of tailings into the diversion ditch was observed at location where photograph #2 was taken. The diversion ditch comes in contact with the water pond and flows through a vegetated area to the North west until it drains into Silver Creek less than 50 feet south of U.S. Route 40. The diversion ditch is about 3-4 feet wide prior to the water pond. From the water pond to Silver Creek the diversion ditch channel narrows to about 12-18 inches. During the site visit on June 14, 1990 we followed the diversion ditch along the tailings pond towards the water pond (Figure 1). We also followed the diversion ditch from the pond through the vegetated area until it drains into Silver Creek. There is a continuous channel flow of the diversion ditch from the water pond to Silver Creek. Edwin L. Osika and Kerry Gee of United Park City Mines also observed this channel of the diversion ditch during the visit. Photographs were taken during the site visit to document the channel flow and are included in this report. A copy of each photograph was provided to Edwin L. Osika.

2. DISTANCE TO SILVER CREEK:

The distance from RFT-TA-3(Figure 1), where tailings were observed sloughing into the Diversion Ditch and where photograph #2 was taken, to Silver Creek is less than one mile.

3. SLOPE OF THE INTERVENING TERRAIN:

The slope of the intervening terrain from RFT-TA-3(Fig. 1) where tailings were observed sloughing into the diversion ditch and where photograph 2 was taken to Silver Creek is approximately 3% (Figure 3).

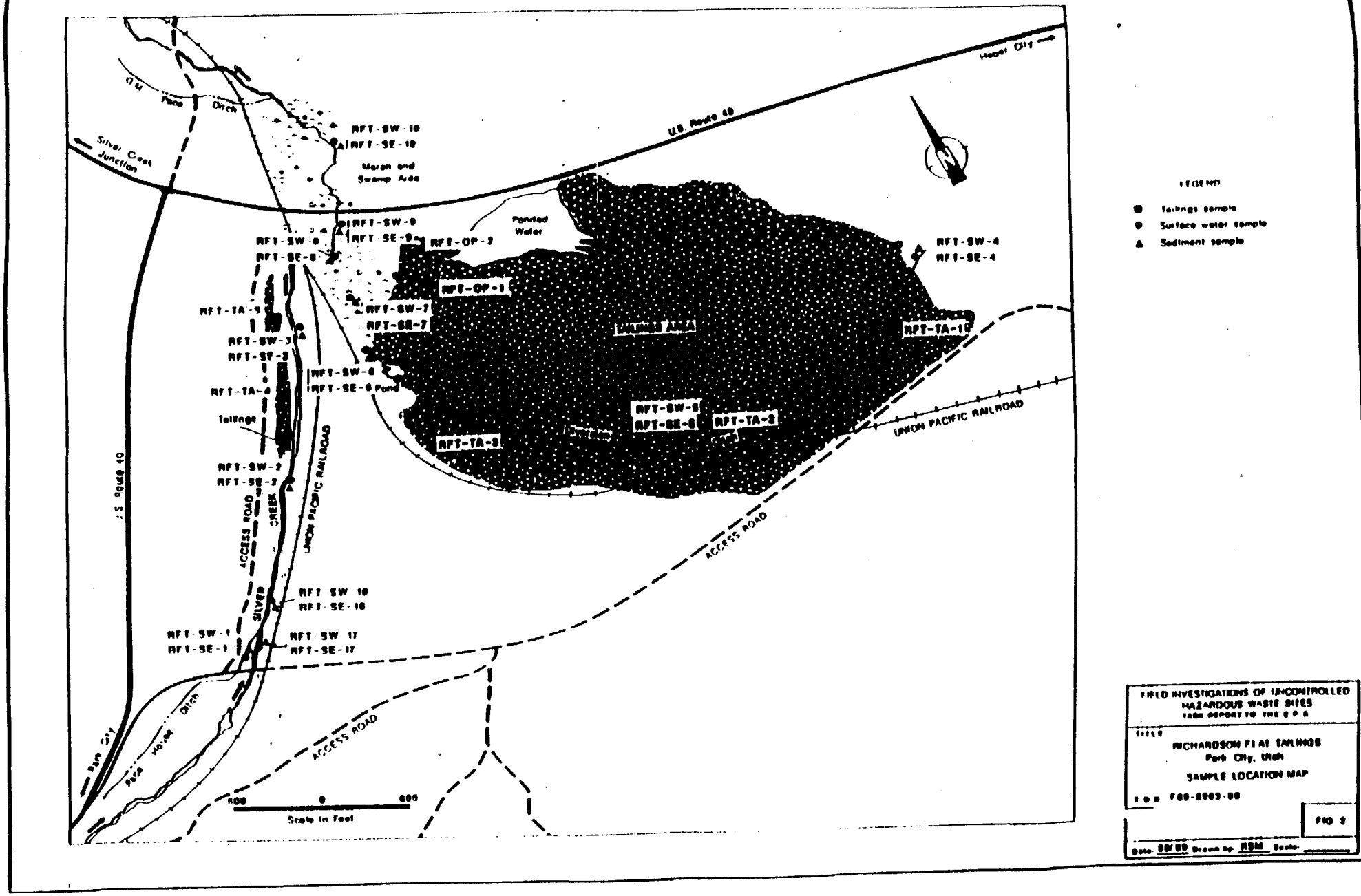


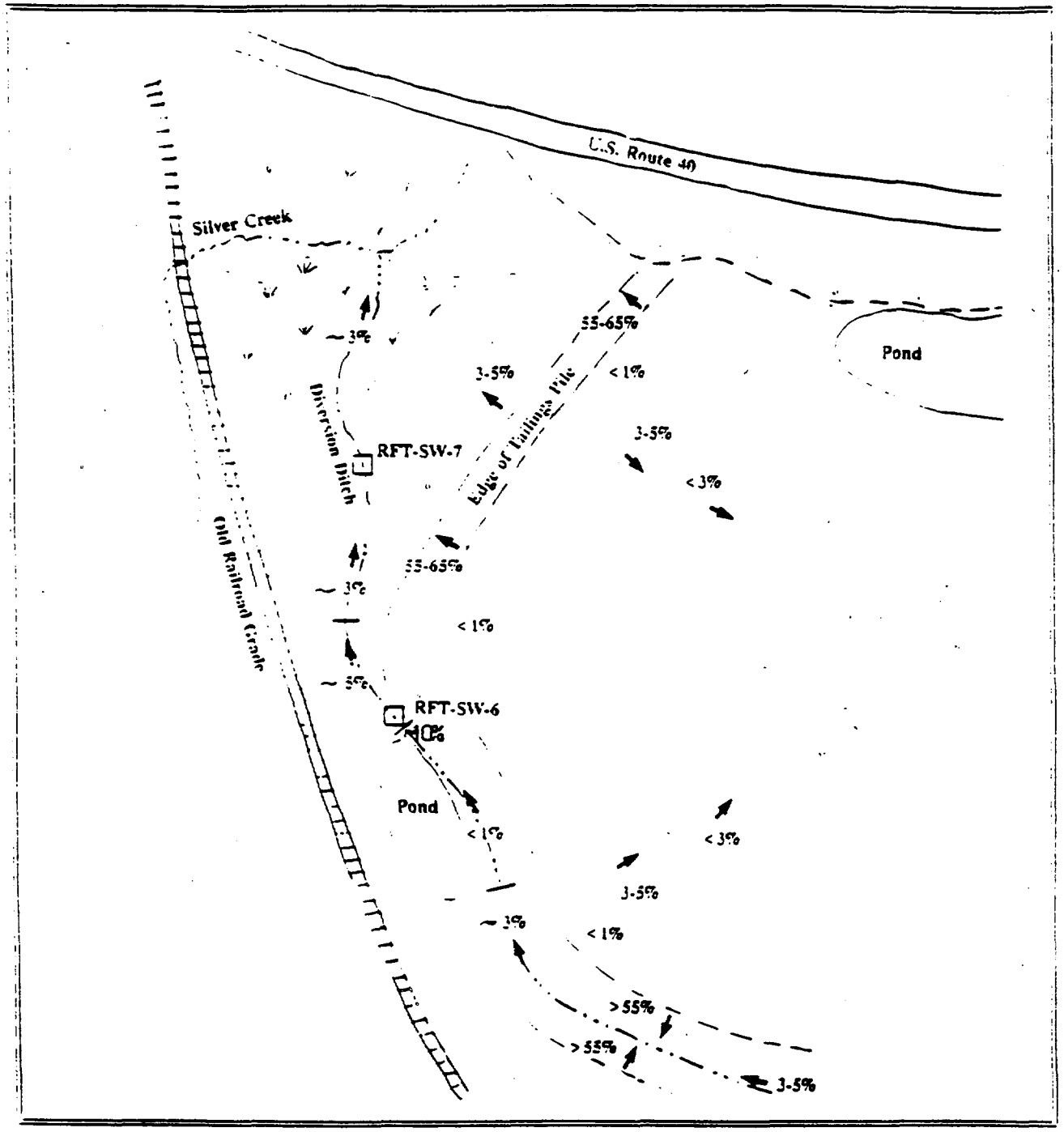
600 0 600

Scale in feet

N

UTAH DEPT. OF HEALTH Bureau of Solid and Hazardous Waste		
FIGURE 1		
by MAS	date 6/18/90	SCALE


Heber City
U.S. Route 40
Old Pace Ditch
Silver Creek Junction
RFT-SW-10
RFT-SE-10
Marsh and Swamp Area
RFT-SW-9
RFT-SE-9
RFT-OP-2
Ponded Water
RFT-SW-8
RFT-SE-8
RFT-OP-1
RFT-SW-4
RFT-SE-4
RFT-TA-1
RFT-SW-7
RFT-SE-7
TAILINGS AREA
RFT-TA-10
RFT-SW-3
RFT-SE-3
RFT-SW-6
RFT-SE-6 Pond
RFT-TA-4
tailings
RFT-SW-5
RFT-SE-5
RFT-TA-2
RFT-TA-3
UNION PACIFIC RAILROAD
RFT-SW-2
RFT-SE-2
U.S. Route 40
ACCESS ROAD
SILVER CREEK
RFT SW 16
RFT SE 16
RFT-SW-1
RFT-SE-1
RFT SW 17
RFT-SE-17
Pace Ditch
ACCESS ROAD
Scale in Feet
LEGEND
tailings sample
Surface water sample
Sediment sample
FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES
TASK REPORT TO THE E P A
RICHARDSON FLAT TAILINGS
Park City, Utah
SAMPLE LOCATION MAP
FIG 2

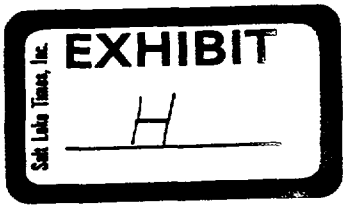


Arrows point downslope in direction of measurement or estimate

NORTH

UTAH DEPT. OF HEALTH Bureau of Solid and Hazardous Waste		
Sketch Showing Slopes in the Vicinity of the Diversion Ditch and Silver Creek RICHARDSON FLAT SUMMIT COUNTY, UTAH		
by JLK MAS	date 7/5/90	SCALE NTS

FIGURE 3



BEFORE THE UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

IN THE MATTER OF THE PROPOSED LISTING OF RICHARDSON FLAT TAILINGS, SUMMIT COUNTY, UTAH, ON THE NATIONAL PRIORITIES LIST	))))))	AFFIDAVIT OF KERRY GEE IN SUPPORT OF THE COMMENTS OF UNITED PARK CITY MINES COMPANY IN OPPOSITION TO PROPOSED RULE

STATE OF UTAH)
): ss.
COUNTY OF SALT LAKE)

KERRY GEE, being duly sworn upon his oath, deposes and says:

1. I am currently geologist for United Park City Mines Company in Salt Lake City, Utah.

July 18-20, 1989 FIT Site Inspection

2. In July 1989, I was also employed as geologist for United Park City Mines Company.

3. During the period of July 18-20, 1989, as geologist for United Park City Mines Company, I personally accompanied Ecology & Environment, Inc.'s Field Investigation Team ("FIT") during their sampling efforts and site investigation for the United States Environmental Protection Agency at the Richardson Flat Tailings site, Summit County, Utah.

4. Edwin L. Osika, Jr., Vice President of United Park City Mines Company, and William J. Bullock, an environmental engineer for MSE, Inc., Butte, Montana, and consultant for United Park City Mines Company, also accompanied the FIT members at the Richardson Flat Tailings site.

5. I personally observed the FIT conducting the supplemental site inspection investigation and collecting samples at the Richardson Flat Tailings site from July 18-20, 1989.

6. During the July 18-20, 1989 site inspection, I did not visually observe any release of tailings or hazardous substances into the Diversion Ditch at the site, and I did not visually observe any tailings or hazardous substances "sloughing" or "slumping" into the Diversion Ditch at the Richardson Flat Tailings site.

7. During the July 18-20, 1989 site inspection, I did not visually observe any release of tailings or hazardous substances into Silver Creek, and I did not observe any tailings or hazardous substances "sloughing" or "slumping" directly into Silver Creek.

8. During the July 18-20, 1989 site inspection, no member of the FIT called my attention to or indicated his observation of any release of tailings or a hazardous substance into the Diversion Ditch or into Silver Creek or any "sloughing" or

"slumping" of tailings or a hazardous substance into the Diversion Ditch or into Silver Creek.

9. Because the primary purpose of this site investigation by the FIT from July 18-20, 1989, was to verify a release of contaminants into Silver Creek or other surface water, it would seem to me that any observed release into surface water would have been documented in the 1989 Supplemental Site Inspection Report and would have been verified during the July 18-20, 1989 site inspection by additional sampling.

June 7 and June 14, 1990 UBSHW Site Visits

10. On June 7, 1990 and June 14, 1990, as geologist for United Park City Mines Company, I personally accompanied Muhammad Slam and Jason Knowlton, employees of the Utah Bureau of Solid and Hazardous Waste (hereinafter "the UBSHW employees"), on their site visits at the Richardson Flat Tailings site, Summit County, Utah.

11. Edwin L. Osika, Jr., Vice President of United Park City Mines Company, also accompanied the UBSHW employees on their site visits at the Richardson Flat Tailings site on June 7 and June 14, 1990.

12. I personally accompanied the two UBSHW employees at all times during the June 7 and June 14, 1990 site visits.

13. During the June 7 and June 14, 1990 site visits, the UBSHW employees did not take any samples or perform any tests at the Richardson Flat Tailings site. The two UBSHW employees did take certain measurements at the site, took a number of photographs, and visually observed the site.

14. During the June 7 and June 14, 1990 site visits, I did not visually observe any release of tailings or hazardous substances into the Diversion Ditch at the site, and I did not visually observe any tailings or hazardous substances "sloughing" or "slumping" into the Diversion Ditch at the Richardson Flat Tailings site.

15. During the June 7 and June 14, 1990 site visits, I did not visually observe any release of tailings or hazardous substances into Silver Creek, and I did not visually observe any tailings or hazardous substances "sloughing" or "slumping" directly into Silver Creek at the Richardson Flat Tailings site.

16. During the June 7 and June 14, 1990 site visits, neither of the UBSHW employees called my attention to or indicated his observation of any release of tailings or hazardous substance into the Diversion Ditch or into Silver Creek or any "sloughing" or "slumping" of tailings or a hazardous substance into the Diversion Ditch or into Silver Creek.

DATED this 4th day of April, 1992.

KERRY GEE

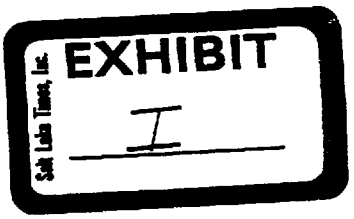
SUBSCRIBED AND SWORN TO before me this 4th day of April, 1992.

Notary Public
JULIE G. McKENZIE
215 So. State 12th Fl.
Salt Lake City, Utah 84151
My Commission Expires
June 22, 1993
State of Utah

Notary Public
Residing in Davis County

My Commission Expires:
6-22-93

RJB:040392A



BEFORE THE UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

IN THE MATTER OF THE PROPOSED LISTING OF RICHARDSON FLAT TAILINGS, SUMMIT COUNTY, UTAH, ON THE NATIONAL PRIORITIES LIST	))))))	AFFIDAVIT OF WILLIAM J. BULLOCK IN SUPPORT OF THE COMMENTS OF UNITED PARK CITY MINES COMPANY IN OPPOSITION TO PROPOSED RULE

STATE OF MONTANA)
): ss.
COUNTY OF Silver Bow)

WILLIAM J. BULLOCK, being duly sworn upon his oath, deposes and says:

1. I am currently an environmental engineer for Pioneer Technical Services, Inc., in Butte, Montana.

2. In July 1989, I was employed as an environmental engineer for MSE, Inc., in Butte, Montana.

3. In July 1989, while employed as an environmental engineer for MSE, Inc., I performed consulting services for United Park City Mines Company.

4. During the period of July 18-20, 1989, as a consultant for United Park City Mines Company, I personally accompanied Ecology & Environment, Inc.'s Field Investigation Team ("FIT") during their sampling efforts and site investigation for

the United States Environmental Protection Agency at the Richardson Flat Tailings site, Summit County, Utah.

5. Edwin L. Osika, Jr., Vice President of United Park City Mines Company, and Kerry Gee, geologist for United Park City Mines Company, also accompanied the FIT members at the Richardson Flat Tailings site.

6. I personally observed the FIT conducting the supplemental site inspection investigation and collecting samples at the Richardson Flat Tailings site from July 18-20, 1989.

7. During the July 18-20, 1989 site inspection, I did not visually observe any release of tailings or hazardous substances into the Diversion Ditch at the site, and I did not visually observe any tailings or hazardous substances "sloughing" or "slumping" into the Diversion Ditch at the Richardson Flat Tailings site.

8. During the July 18-20, 1989 site inspection, I did not visually observe any release of tailings or hazardous substances into Silver Creek, and I did not observe any tailings or hazardous substances "sloughing" or "slumping" directly into Silver Creek.

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the Diversion Ditch or into Silver Creek or any "sloughing" or "slumping" of tailings or a hazardous substance into the Diversion Ditch or into Silver Creek.

10. Because the primary purpose of this site investigation by the FIT from July 18-20, 1989, was to verify a release of contaminants into Silver Creek or other surface water, it would seem to me that any observed release into surface water would have been documented in the 1989 Supplemental Site Inspection Report and would have been verified during the July 18-20, 1989 site inspection by additional sampling.

DATED this 1st day of April, 1992.

William J. Bullock
WILLIAM J. BULLOCK

SUBSCRIBED AND SWORN TO before me this 1st day of April, 1992.

Anita Burroughs
Notary Public
Residing at: Butte, Mont

My Commission Expires:
Dec 28, 1993

RJB:033092b

Norman H Bangerter
Governor
Suzanne Dandoy M D M P H
Executive Director
Kenneth L. Alkema
Director

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Bureau of Solid & Hazardous Waste
288 North 1460 West P O Box 16690
Salt Lake City Utah 84116-0690
(801) 538-6170

JUN 25 1990

Mr. Edwin L. Osika, Jr.
United Park City Mines, Co.
309 Kearns Bldg.
Salt Lake City, Utah 84101

Dear Mr. Osika:

Enclosed is a copy of a memorandum which includes the findings of our visits to Richardson Flat Site on June 7, and June 14, 1990. Originals of all photographs which are attached to this memorandum were provided to you during the site visits.

If you have any questions, please contact Muhammad Slam of my staff at 801-538-6170.

Sincerely,

Kent P. Gray
CERCLA Branch Manager

Enclosure

KP/MS/al

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

Bureau of Solid & Hazardous Waste
288 North 1460 West, P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6170

MEMORANDUM

TO: File

FROM: Muhammad Slam and Jason Knowlton

DATE: June 18, 1990

SUBJECT: Richardson Flat Site visits on June 7, and June 14, 1990

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The dike slopes approximately 55-65% for about 45 feet which is the distance from the top edge of the dike to its toe (See Figure 3).

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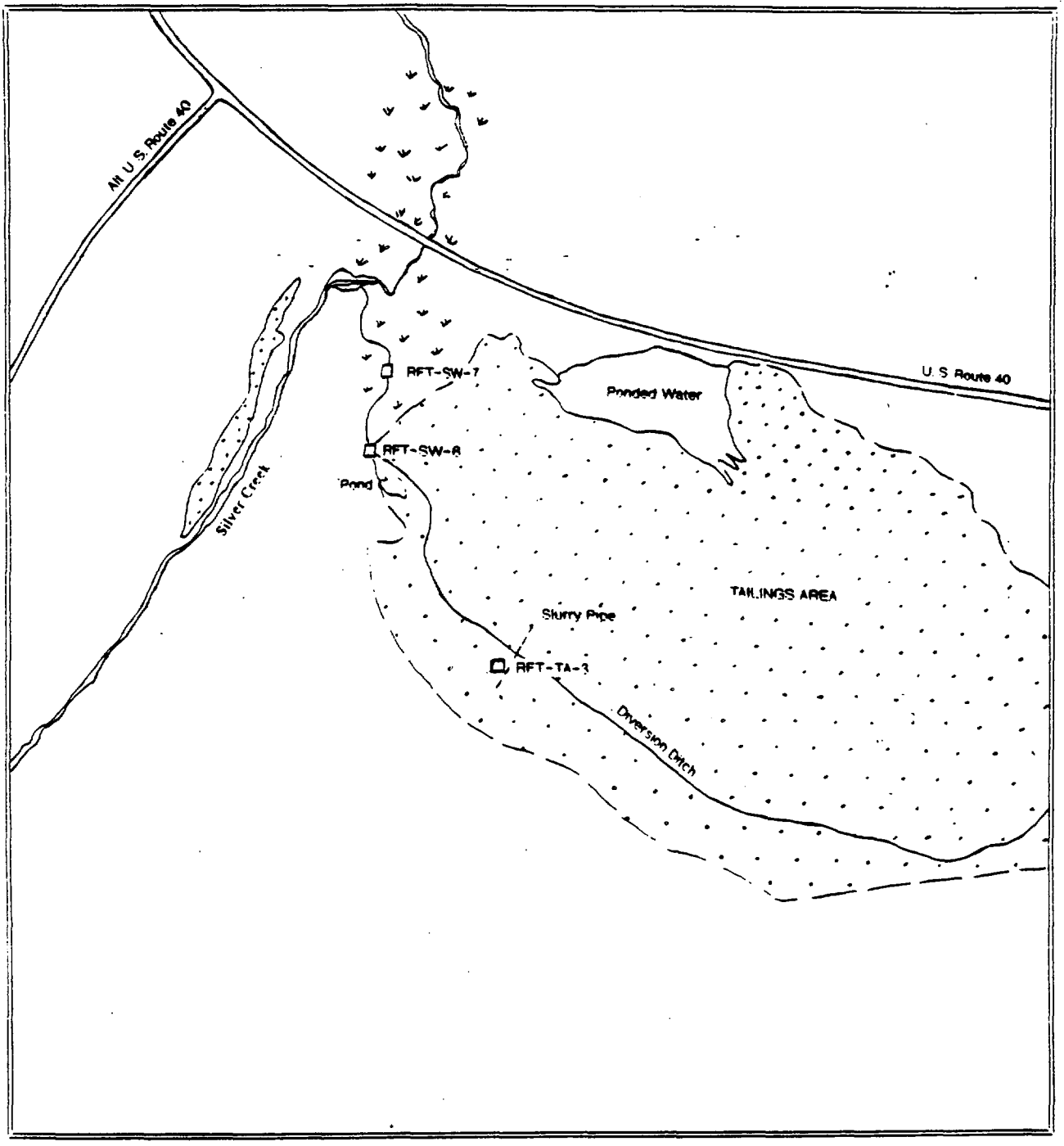
Based upon measurements taken during the site visit, the distance from the toe of the tailings pond dike to the Silver Creek is approximately 300 feet. The distance from sample location RFT-SW-7 (collect by FIT) to Silver Creek is approximately 100 feet.



600 0 600

Scale in feet

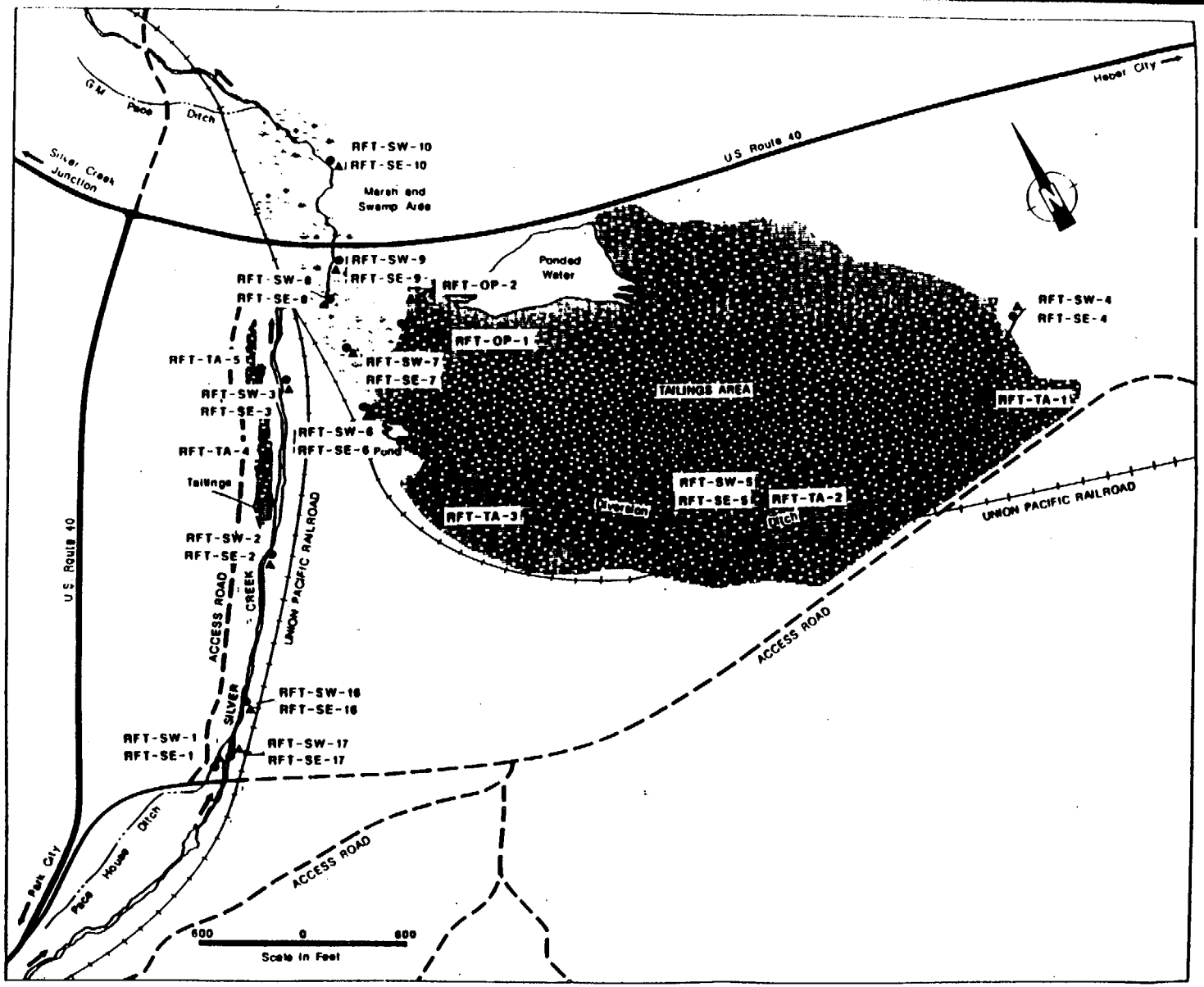
N

UTAH DEPT. OF HEALTH

Bureau of Solid and Hazardous Waste

FIGURE 1

by	date	SCALE
MAS	6/18/90	



LEGEND

- Tailings sample
- Surface water sample
- Sediment sample

FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES
TASK REPORT TO THE E P A.

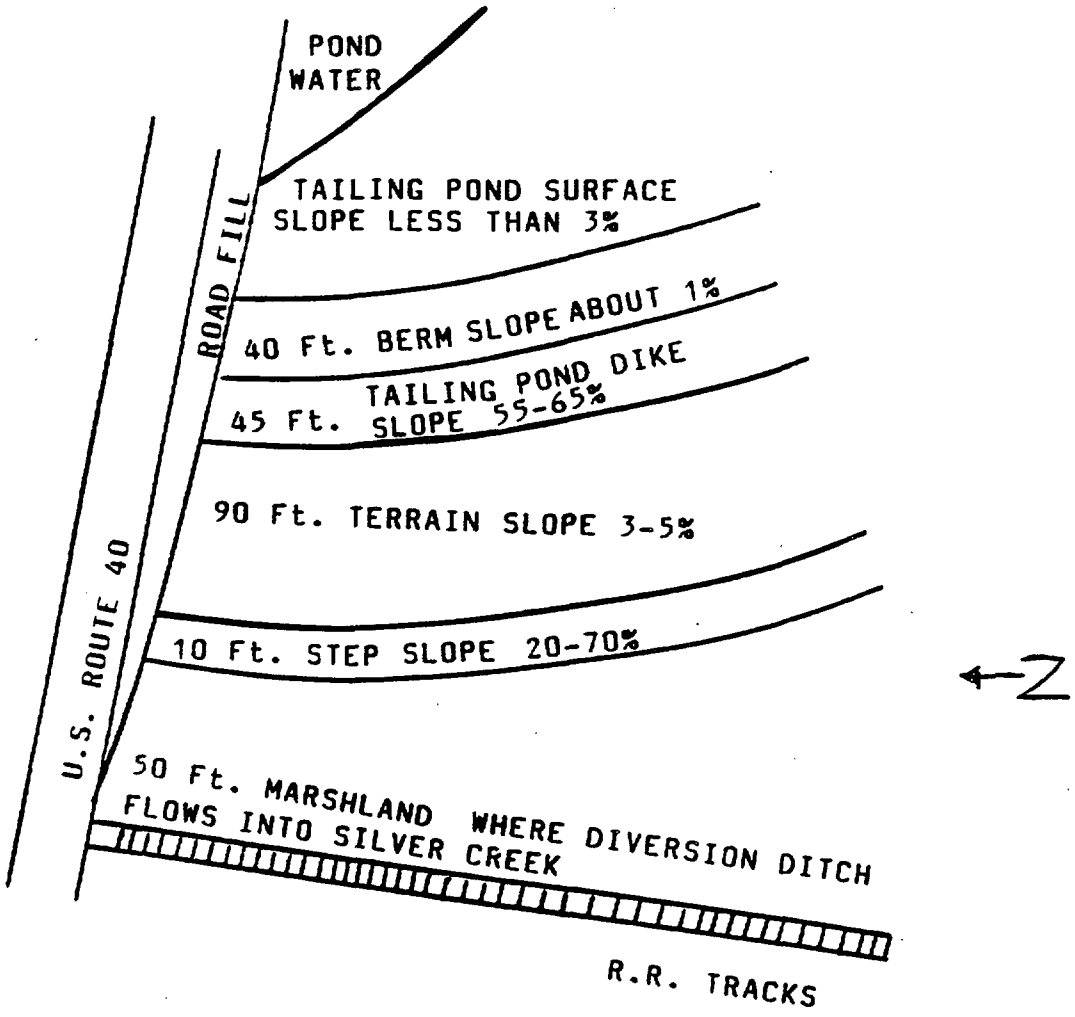
TITLE
RICHARDSON FLAT TAILINGS
Park City, Utah
SAMPLE LOCATION MAP

T D D F08-8903-08

FIG. 2

Date: 08/89 Drawn by: RSM Scale:

FIGURE 3



NOT TO SCALE

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Dennis L. Nikema
Director

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Bureau of Solid & Hazardous Waste
288 North 1460 West P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6170

SEP 20 1990

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United Park City Mines, Co.
309 Kearns Bldg.
Salt Lake City, Utah 84101

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Sincerely,

Kent P. Gray, Director
Bureau of Environmental Response and Remediation

Enclosure

KP/MS/al

Norman H. Bangerter
Governor
Suzanne Dandoy M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Bureau of Solid & Hazardous Waste
288 North 1460 West, P.O. Box 16690
Salt Lake City, Utah 84116-0690
801) 538-6170

MEMORANDUM

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DATE: July 6, 1990

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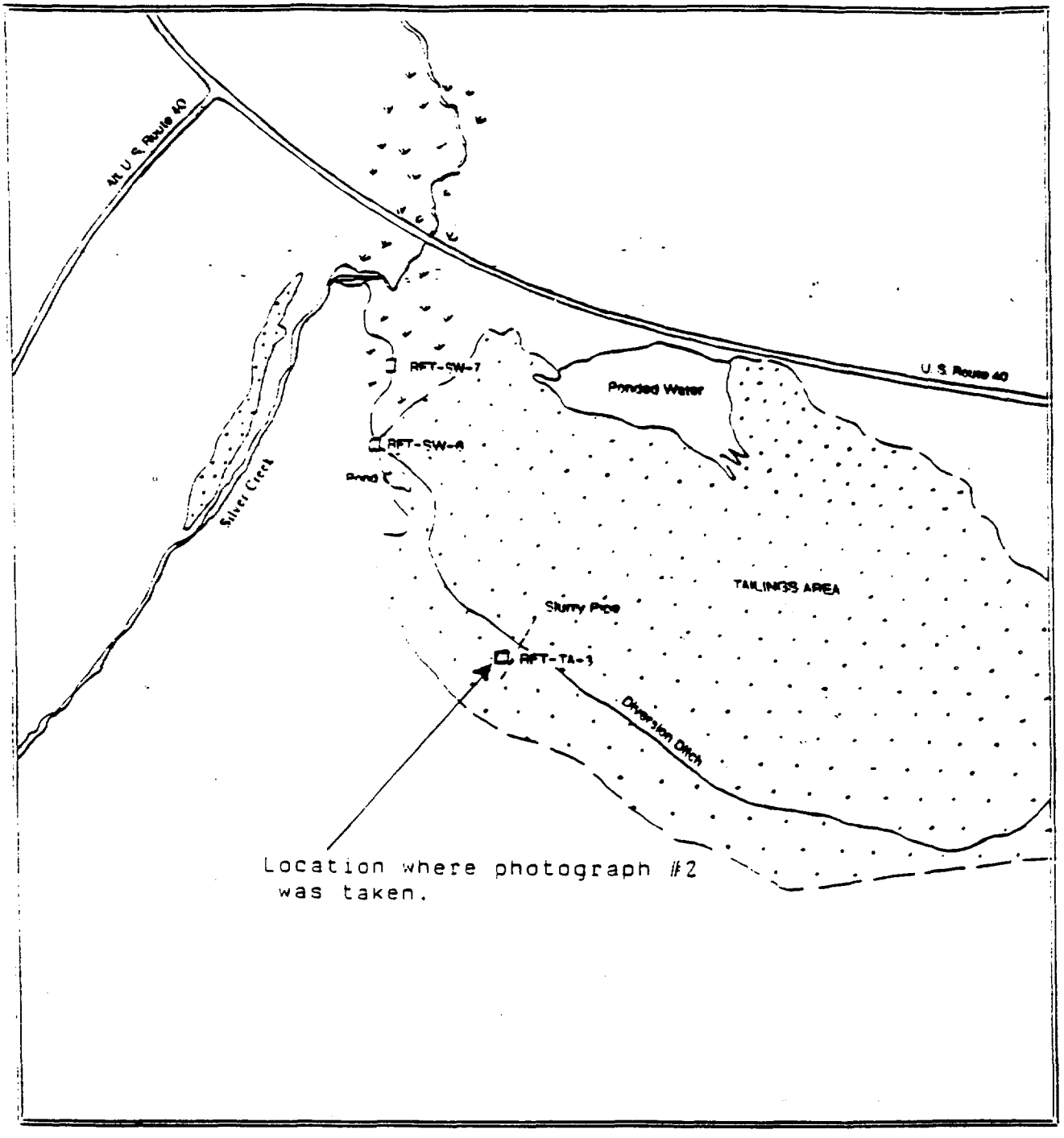
2. DISTANCE TO SILVER CREEK:

The distance from RFT-TA-3(Figure 1), where tailings were observed sloughing into the Diversion Ditch and where photograph #2 was taken, to Silver Creek is less than one mile.

3. SLOPE OF THE INTERVENING TERRAIN:

The slope of the intervening terrain from RFT-TA-3(Fig. 1) where tailings were observed sloughing into the diversion ditch and where photograph 2 was taken. to Silver Creek is approximately 3% (Figure 3).

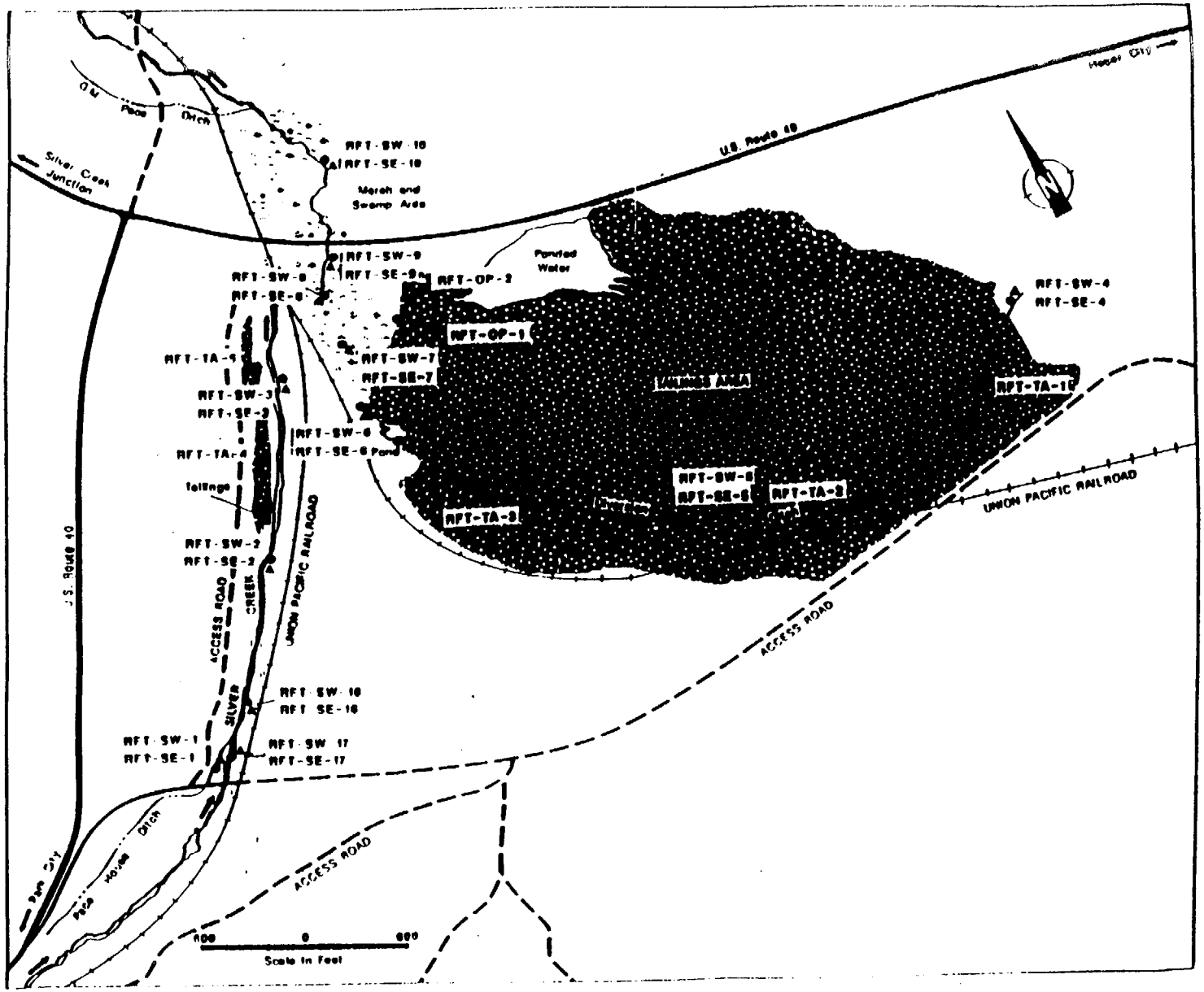


600 0 600

Scale in feet

N

UTAH DEPT. OF HEALTH Bureau of Solid and Hazardous Waste		
FIGURE 1		
by MAS	date 6/18/90	SCALE



LEGEND

- tailings sample
- Surface water sample
- Sediment sample

FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES
TASK REPORT TO THE E P A

TITLE

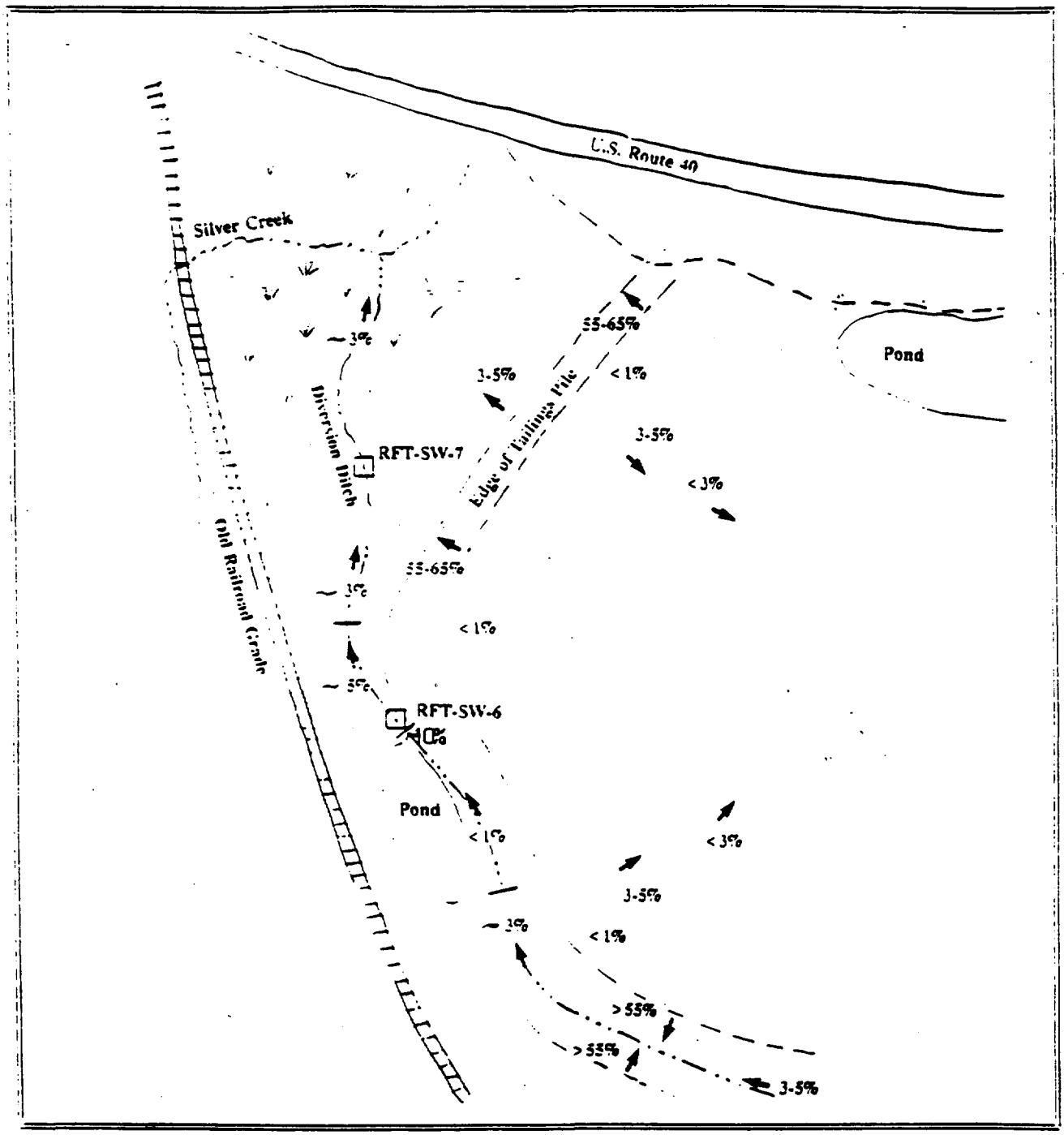
RICHARDSON FLAT TAILINGS
Park City, Utah

SAMPLE LOCATION MAP

T D D F08-8903-08

FIG 2

Date 8/89 Drawn by RSM Scale

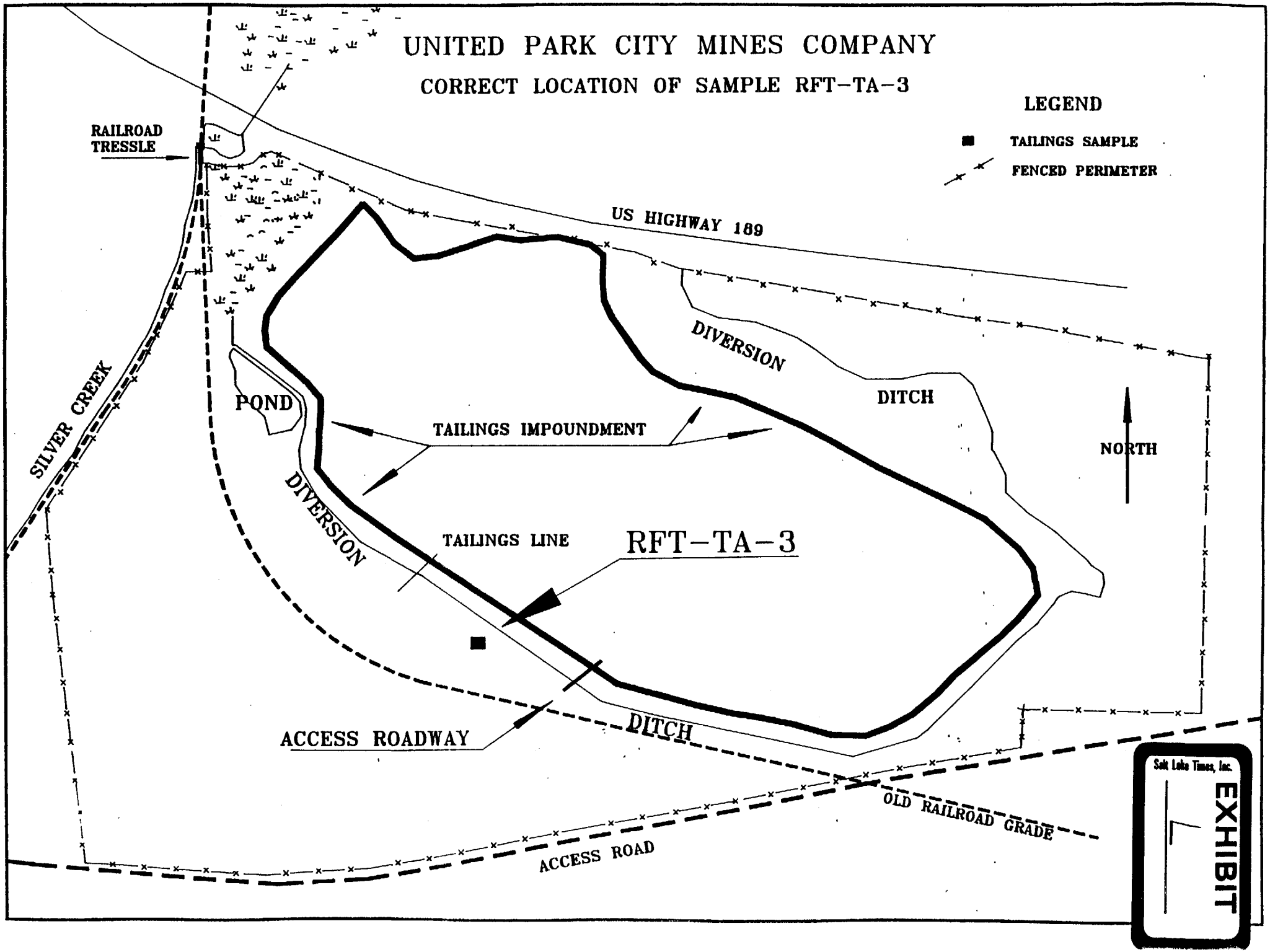


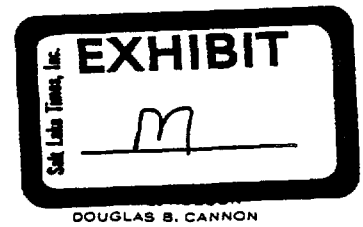
Arrows point downslope
in direction of measurement
or estimate

NORTH

UTAH DEPT. OF HEALTH Bureau of Solid and Hazardous Waste		
Sketch Showing Slopes in the Vicinity of the Diversion Ditch and Silver Creek RICHARDSON FLAT SUMMIT COUNTY, UTAH		
by JLK MAS	date 7/5/90	SCALE NTS

FIGURE 3


UNITED PARK CITY MINES COMPANY
CORRECT LOCATION OF SAMPLE RFT-TA-3
LEGEND
TAILINGS SAMPLE
FENCED PERIMETER
RAILROAD TRESSLE
US HIGHWAY 189
DIVERSION DITCH
POND
TAILINGS IMPOUNDMENT
NORTH
SILVER CREEK
DIVERSION
TAILINGS LINE
RFT-TA-3
ACCESS ROADWAY
DITCH
OLD RAILROAD GRADE
ACCESS ROAD
Salt Lake Times, Inc.
EXHIBIT



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RECORD OF COMMUNICATION

TO: FILE

FROM: ROSEMARY J. BELESS

DATE: MARCH 12, 1992

RE: LACK OF COMMERCIAL AGRICULTURAL USE OF LAND IRRIGATED BY SILVER CREEK, SUMMIT COUNTY, UTAH

==========

In a telephone conversation with James W. Carter, attorney for Park City Municipal Corporation, on March 12, 1992, Mr. Carter confirmed to me that Park City Municipal Corporation, under a Stipulated Decree entered in a lawsuit between Park City Municipal Corporation and the Pace and Gillmor families, compensates the Paces and the Gillmors for crop loss due to the inability of Park City Municipal Corporation to deliver sufficient irrigation water through the Pace-Homer Ditch and Silver Creek to the Paces and the Gillmors. The Paces and the Gillmors then use the crop-loss payments from Park City Municipal Corporation to purchase feed from the Snowville, Utah area for their animals. This Stipulated Decree has been in effect for at least four years and will be in effect for the foreseeable future. Therefore, little, if any, water diverted from Silver Creek is used to produce forage for livestock on the Standley Pace, Angus Pace, and James Gillmor pastureland. Forage for their livestock is purchased in Snowville, Utah, and paid for by Park City.

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RECORD OF COMMUNICATION

TO: ROSEMARY J. BELESS

FROM: JODI L. BANGERTER

DATE: MARCH 20, 1992

RE: THE LACK OF A VIABLE FISHERY IN SILVER CREEK, SUMMIT COUNTY, UTAH

==========

In a telephone conversation with Kent Summers, Utah Division of Wildlife Resources, Northern Region, on March 20, 1992, Mr. Summers stated that the Division of Wildlife Resources sampled Silver Creek, Summit County, Utah, with sodium cyanide a few years ago and did not catch any fish. A prior study on Silver Creek performed in July 1970 (a copy of which is attached hereto), performed with electroshocking, showed that there were no game species of fish in Silver Creek.

STREAM SURVEY
UTAH STATE DIVISION OF FISH AND GAME
(Sheet No. 1)

Date July 15, 1970 Investigator U. D. Fish - U. S. F.

Catalog No. IV B 45 Stream Silver Creek

Tributary to Weber River Drainage Great Salt Lake

Report No. 1 of 1 reports.

Total miles of stream 10½ miles of suitable habitat

Watershed description Beginning at riparian habitat at base of Aspen zone. Flow through sagebrush - scrub oak zone to Weber River.

Landownership and access: Miles of stream on private lands: 10½

on State lands: — on Forest Service lands: —
(See map no.)

Access: Via I-80 from Wendover to Silver Creek Jct; then via I-40 and U248 to headwaters.
(See map no.)

Location of dams and diversions: (See map no.)

NONE.

Stream flow patterns: (in addition to flow records, actual measurements made by investigator, etc., include flows or lack of flows resulting from dams and diversions)

No Records Available

Pollution problems: (also include any past pollution-caused fish kills on stream)

No Record of Pollution Problem.

Habitat improvement: (feasibility of improving spawning areas of increasing carrying capacity) Revegetation with Willow and Poplar. Deep pool formation using boulders

List proposed projects (highway, dams, etc.): None Proposed. Previous I-80 constction has seriously damaged stream.

Fishing pressure: (Attach creel census summaries to this report.)

NONE

Water analysis (complete). Attach report.

STREAM SURVEY
UTAH STATE DIVISION OF FISH AND GAME
(Sheet No. 2)

Date 7/14/70 Collection No. 1-1-[illegible] Investigator [illegible]

Catalog No. IP 45 Stream Silver Creek

Tributary to Weber River Drainage Great Salt Lake

~~Report~~ no. 1 of 1 ~~reports~~.

Location of station 1.1 mile downstream from RANCH over-pass midway in CANYON

Length of Station 0.1 Mile Elevation of Station

Temperature		Discharge		Bottom Type	
Time	1:30	Velocity fps	1.2	Boulders	2 %
Air	88	Volume cfs	4.14	Rubble	54 %
Water	76°	Maximum		Gravel	9 %
Time		Date	NO Records.	Sand	9 %
Air		Minimum		Silt	— %
Water		Date		Other	— %

S.g FT Pool 319
% Pool 6
% opt 12

Average width of stream 10.1 ft. Area of station 5333 sq. ft.

Pools: No. per 1/10 mile 10 Ave. width 5.8 Ave. length 5.5

Bank cover composition 95% grass-forbs, 4% Willow, 1% Trees

% bank stabilization 100 % stream shaded 6%

Pollution (types, sources, amounts, etc.)

NONE Evident

		Aquatic Vegetation		Bottom fauna	
Turbidity	Clear				
pH	8.7	Absent	—	Absent	
Phenol. Alk.	0	Sparse		Sparse	
Methyl Orange	218.9	Common		Common	
dO_2	8.2	Abundant		Abundant	1.5 grms
CO_2	25	Major types		Major types	70% Trichoptera
					20% Plecoptera
					10% Misc.

Remarks Historical Turn-up by highway construction. Completely rip-rapped and sandwiched between RR. and I-80.

Fish Collections:

Method of Collection: AC 115 V. Electro-Shocker **Length of Station** 0.1 Mile

Population:	Total Wt.	No.	Scale Samples:	Preserved:	Preserved:
Whitefish					
Sculpin					
Nongame	Abdt.	—			

Success: NO GAME Species
Numbers Missed _____ **Total Number Collected** — **% Success** —

Length Frequencies:	0-3.5		4.5		6.5		8.5		10.5		12.5		14.5		16.5			
Species:*	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Rainbow Trout																		
Brook Trout																		
Whitefish																		
Sculpin																		
Pantosteus	Abundant																	
Richardsonius	Common																	

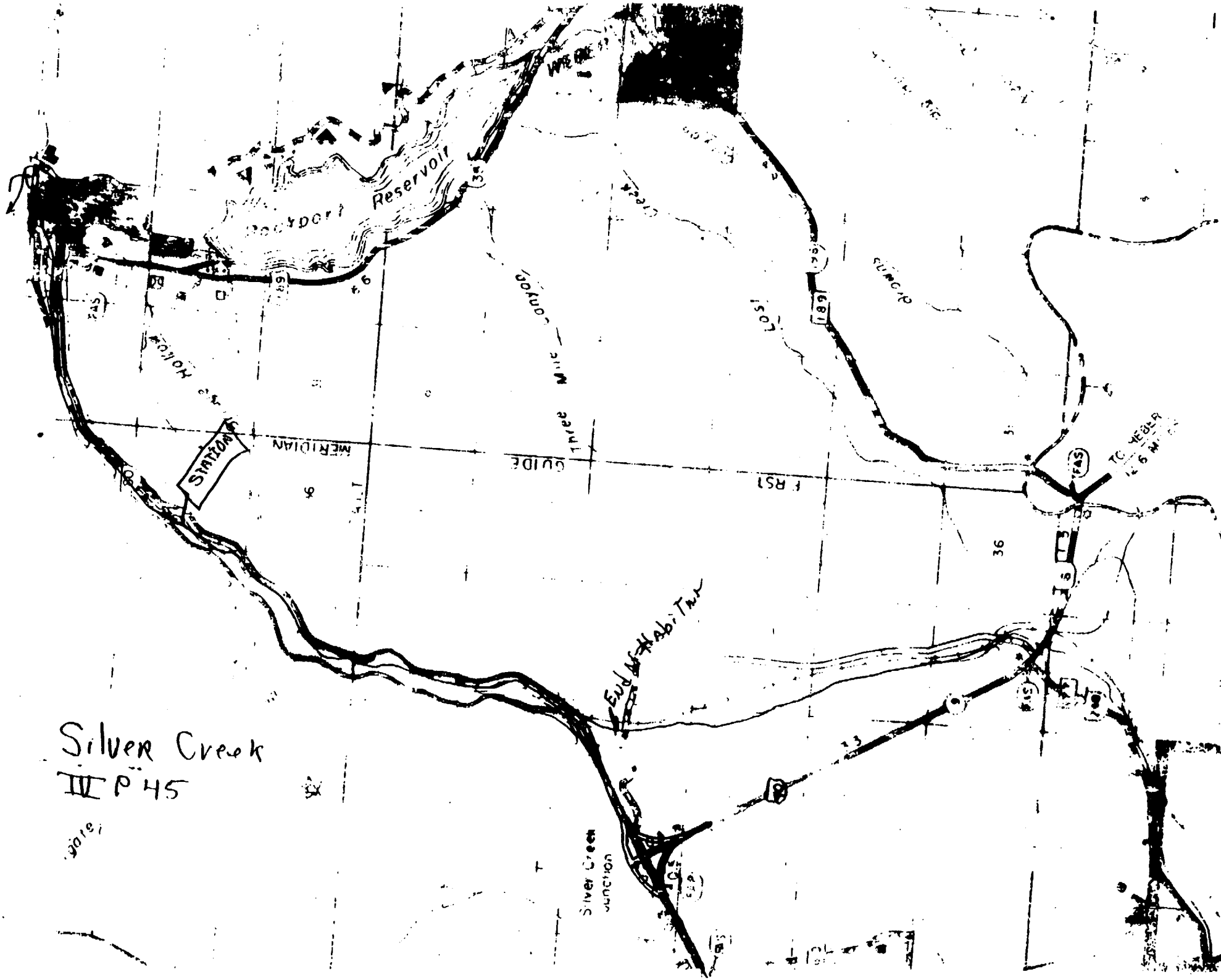
*Lengths are read to nearest inch. Categories represented by midpoint of 2-inch length group.

Previous Stocking

Species	1964	1965				
Rainbow Trout Catch.	1352	Nothing	Stocked	Since		

Items needing further study: Spring Spawning Potential For Weber R. Cutthroat

Recommended improvements: Rehabilitation with Shrub producing vegetation and pool development.


Reservoir
Silver Creek
Junction
Silver Creek
III P 45

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OF COUNSEL
PETER W. BILLINGS

RECORD OF COMMUNICATION

TO: ROSEMARY J. BELESS

FROM: JOHN D. RAY

DATE: MARCH 26, 1992

RE: THE LACK OF A VIABLE FISHERY IN SILVER CREEK, SUMMIT COUNTY, UTAH

==========

In a telephone conversation with Kent Summers, Utah Division of Wildlife Resources, Ogden office, on March 26, 1992, Mr. Summers indicated to me that he thought the last fishery study to be conducted on Silver Creek, Summit County, Utah, was performed in 1986. Mr. Summers conducted the study. He said that a limited amount of sodium cyanide was used at two stations in the study. The first station where he conducted the study was just above Wanship above an old bridge. The second station was located upstream from an overpass and was conducted between the two freeway lanes, apparently still in the canyon. Mr. Summers stated that the study produced no fish.

FEDERAL EXPRESS

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Street Address: 215 S. STATE 12TH FL
City: SALT LAKE CITY State: UT ZIP Required: 84111

2 To (Recipient's Name) Please Print: Larry Reed, Director
Recipient's Phone Number (Very Important): (202) 260-8602
Company: Hazardous Site Evaluation Division (Attn: NPL Staff)
Department/Floor No.: OS-23
Office of Emergency & Remedial Response
Exact Street Address (No P.O. Box): United States Environmental Protection Agency
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5 Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
11 YOUR PACKAGING
16 FEDEX LETTER *
12 FEDEX PAK *
13 FEDEX BOX
14 FEDEX TUBE

Standard Overnight (Delivery by next business afternoon)
51 YOUR PACKAGING
56 FEDEX LETTER *
52 FEDEX PAK *
53 FEDEX BOX
54 FEDEX TUBE

Economy Two-Day (Delivery by second business day†)
30 ECONOMY

Government Overnight (Retail and authorized users only)
46 GOVT LETTER
41 GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
70 OVERNIGHT FREIGHT ** (Confirmed reservation required)
80 TWO-DAY FREIGHT **
† Delivery commitment may be later in some areas
*Declared Value Limit $100
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 HOLD FOR PICK UP
2 DELIVER WEEKDAY
3 DELIVER SATURDAY
4 DANGEROUS GOODS
5
6 DRY ICE lbs.
7 OTHER SPECIAL SERVICE
8
9 SATURDAY PICK UP
10
11
12 HOLIDAY DELIVERY

6 PACKAGES | WEIGHT in Pounds Only | YOUR DECLARED VALUE
Total | Total | Total
DIM SHIPMENT (Chargeable Weight) lbs
Received At
1 Regular Stop 3 Drop Box
2 On Call Stop 4 FBSC 5 Station

Emp. No | Date
Cash Received
Return Shipment
Third Party Chg. To Del Chg. To Hold
Street Address
City State Zip
Received By: X
Date/Time Received FedEx Employee Number

7 Release Signature
FedEx Emp. No Date/Time

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

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FORMAT #099
099

Consequently, the suspended load within Silver Creek can contain these tailings and associated metals. Total metals analyses reflect these suspended tailings in the stream water and show a great deal of variance depending on sampling methodology, sampling locations, and seasonal variables (spring runoff, storms, dry periods, irrigation withdrawls, etc.). These factors can easily account for the high metal concentrations found in RT-SW-3 by E&E in 1985. Filtered water samples are specific to dissolved metals and eliminate the influence of suspended particulate material. These samples provide a more accurate measure of metal content in the water available for uptake by plants, humans, and livestock. Table 2 compares total and dissolved metal concentrations found in Silver Creek on August 1, 1988 (locations correspond to those on Map 2).

TABLE 2

Comparison of Total and Dissolved Metals In Silver Creek on August 1, 1988

Silver Creek Water Sample #	Total Pb ug/L	Diss. Pb ug/L	Total Hg ug/L	Diss Hg ug/L
PC-5	101.2	<0.1	--	--
PC-4	4.1	3.2	--	--
PC-3	12.1	3.5	0.4	<0.1
PC-2	111.2	9.8	1.7	<0.1
PC-1	95.2	5.4	0.7	<0.1

The data illustrate significant differences exist between dissolved and total metal values at the same sampling location, with total metal concentrations as much as 18 times higher than dissolved metals. These data support the hypothesis that metal levels observed by E&E in 1985 are primarily due to

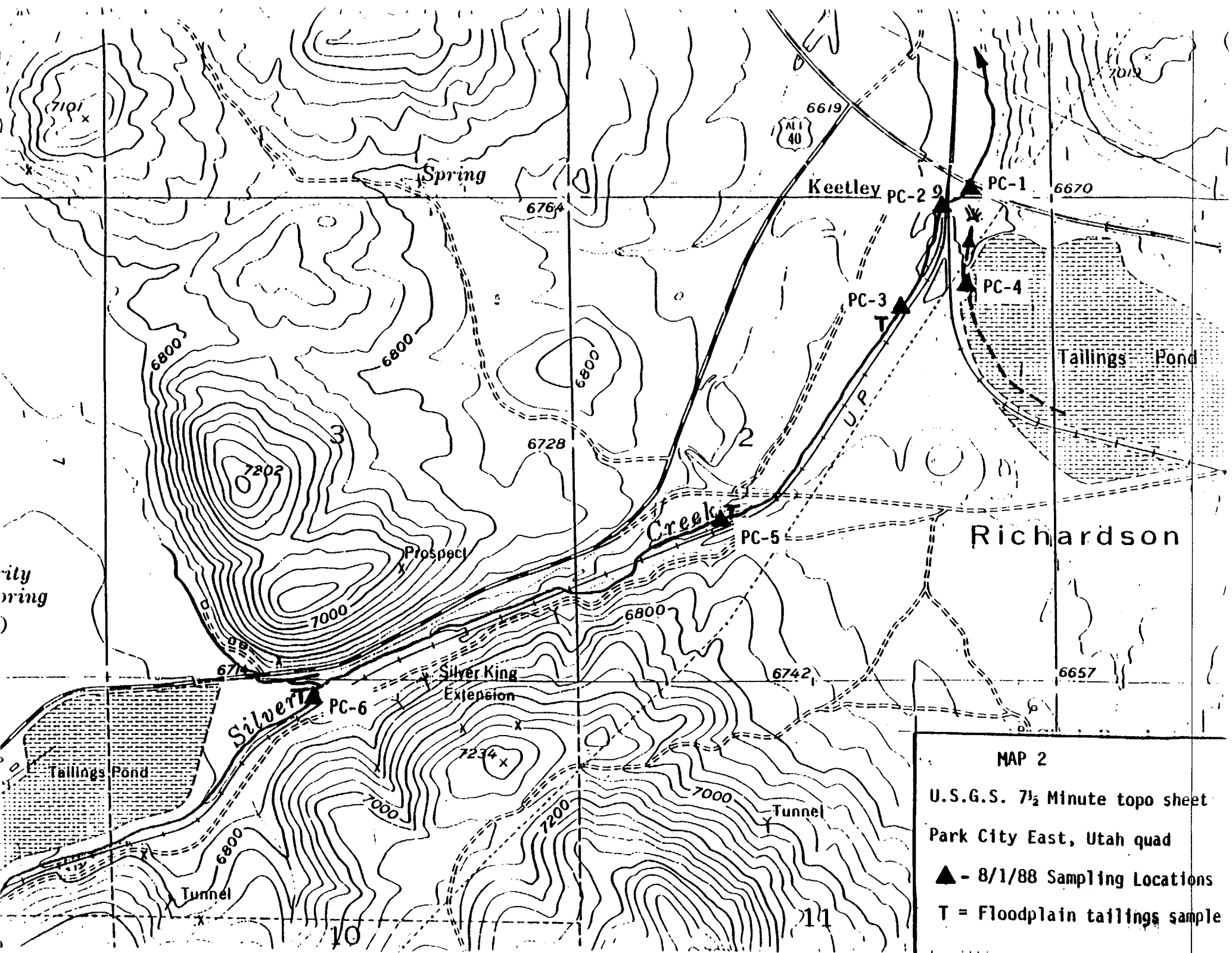

PC-1
PC-2
PC-3
PC-4
PC-5
PC-6
T
Keetley
Spring
Tailings Pond
Tailings Pond
Richardson
Creek
Silver
Prospect
Silver King
Extension
Tunnel
Tunnel
U.P.
6619
6670
6764
6728
6742
6657
7191
7202
7234
7019
6800
7000
7200
671
10
11
MAP 2
U.S.G.S. 7½ Minute topo sheet
Park City East, Utah quad
▲ - 8/1/88 Sampling Locations
T = Floodplain tailings sample

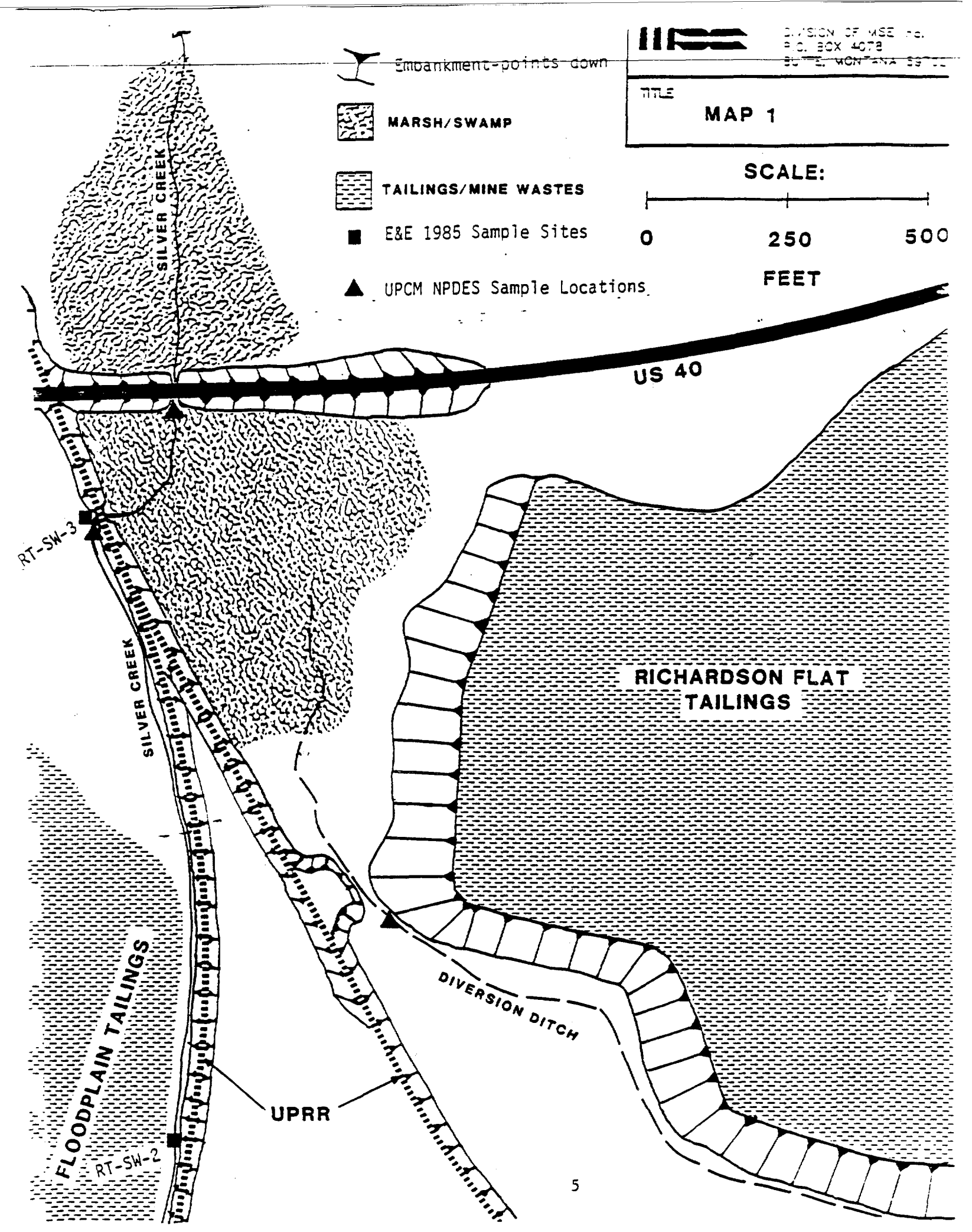
TABLE 1

Mean Total Pb Values for 35 pairs of NPDES Samples Collected on Silver Creek from 1983 to 1988

	Railroad Trestle Upstream Location	US-40 Culvert Downstream Location	Difference (Downstream-Upstream)
Total Pb mg/L)	0.1418	0.1414	-0.0004

The NPDES data has been analyzed statistically using F-tests (analysis of variance) and T-tests (both the two-sample and paired-difference tests). These test results demonstrate conclusively that the upstream and downstream populations are indistinguishable from one another. The two-sample T-Test shows the means of the two populations (upstream and downstream) are not significantly different at the 99.5% confidence level. At the 94% confidence level, the variances are not significantly different either. The paired-difference T-Test shows the average difference between up- and downstream pairs is not significantly different from zero at the 98% confidence level. The mean difference is -0.0004 (upstream is higher). Hence, using existing NPDES data, there is no rationale for suspecting, much less scoring, an "observed release" to Silver Creek from the Richardson Flat tailings.

The difference found between RT-SW-1 and RT-SW-3 in E&E's 1985 sampling is most likely due to entrainment of particulate material from the banks and bedload of Silver Creek. A review of aerial photos, a ground check, and several samples (Map 2) confirm the floodplain downstream from Prospector Square is covered with stream deposited tailings.


Embankment-points down
MARSH/SWAMP
TAILINGS/MINE WASTES
E&E 1985 Sample Sites
UPCM NPDES Sample Locations
DIVISION OF MSE Fo.
P.O. BOX 4078
BUTTE, MONTANA 59701
TITLE
MAP 1
SCALE:
0
250
500
FEET
SILVER CREEK
US 40
RT-SW-3
SILVER CREEK
RICHARDSON FLAT
TAILINGS
DIVERSION DITCH
UPRR
FLOODPLAIN TAILINGS
RT-SW-2

4.0 SURFACE WATER ROUTE

4.1 OBSERVED RELEASE

This score should be 0 since no release has been demonstrated by the data collected during July 1985 by Ecology & Environment (E&E). The sample listed as downgradient (RT-SW-3) was collected at the railroad trestle, per the location map in the Sampling Activities Report, the chain-of-custody forms, and communication with Ms. Sue Kennedy of E&E. This location is, in fact, upgradient from any hydrologic influence of the Richardson Flat tailings (see Map 1). The map provided in E&E's report is grossly in error, and Map 1 illustrates the correct hydrologic and spatial relationships in question. The "downgradient" sample site at the railroad trestle corresponds to United Park City Mines' upgradient NPDES sampling location. As shown on Map 1, any influence from Richardson Flat tailings would enter Silver Creek between the railroad trestle and the culvert under US 40. Any influences from either the diversion ditch through the tailings or seepage beneath the tailings dam would be confined to the marsh between the railroad grade and the highway embankment. The correct sampling locations to measure possible releases from the Richardson Flat tailings correspond to those regularly sampled for NPDES requirements, that is: upstream sample at the railroad trestle and downstream sample at the culvert under US-40. These locations have been regularly sampled since 1977 and analyzed for Total Pb, Mn and Hg. NPDES data are summarized in Table 1, lead is the only element presented since Hg was almost always below detection and Mn is not listed as an element of concern.